A large satellite dish antenna is the central focus, mounted on a complex metal structure. In the foreground, three flags are visible: the United States flag on the left, the United Kingdom flag in the center, and the Spanish flag on the right. The background shows a green hillside under a blue sky with some clouds. The entire image is framed by a thick blue border.

JOINT USERS RESOURCE ALLOCATION PLANNING (JURAP) MEETING

May 15, 2003



May 28, 2003

Refer to: 930-03-014-AJA/ESB:lc

TO: Distribution

FROM: Eugene S. Burke

SUBJECT: Minutes for the Joint Users Resource Allocation Planning Committee Meeting held May 15, 2003.

NEXT JURAP MEETING:
Thursday, June 19, 2003
JPL Bldg. 303, Room 411B at 1:00 p.m.

Attendees:

Abramo, C.	Chang, A.	Hall, J.	Morris, D.
Andujo, A.	Compton, B.	Lacey, N.	Ryan, R.
Baldwin, J.	Doody, D.	Martinez, G.	Slade, M.
Burke, G	Gurnett, D.	Mase, B.	Waldherr, S.

The Joint Users Resource Allocation Planning Committee meets monthly to review the status of Flight Projects, the requirements of other resource users, and to identify future requirements and outstanding conflicts. The last regular meeting was held on May 15, 2003 at the Jet Propulsion Laboratory.

Introductory Remarks / Conflict Resolutions – G. Burke

Mr. Burke welcomed the attendees to the JURAP meeting. Mr. Burke spoke about his recent attendance at the Space Science Conference, where NASA Administrator Sean O'Keefe, spoke about NASA's future development efforts in Nuclear power for spacecraft propulsion and power, as well as optical spacecraft communications. Mr. Burke introduced Don Gurnett of the University of Iowa, who is the U.S. Principal Investigator of the Cluster mission. Mr. Gurnett will present findings of the radio emission data gathered by the Cluster mission.

Special Report

Cluster – D. Gurnett

This presentation described the progress and scientific findings of the Cluster II mission with regards to radio emissions of the Earth. Specifically, Cluster II has confirmed the correlation between Earth's Auroral Field Lines and radio emissions. Cluster II has also observed Earth's "Dawn Chorus" and correlated this radio emission to emanate from the Earth's magnetic equator. There is a final opportunity for the Cluster II spacecraft constellation to take advantage of their relative closeness to Earth to perform some of these special four-spacecraft observations over the next six to nine months.

RARB Action Items – D. Morris

All but one RARB Action Item remains open. Multi-mission DSN Allocation and Planning (MDAP) is to provide a Mars Program coordinated input to the Resource Allocation (Mid-Range) Planning Team (RAPT) of at least one week of schedule, at least 6 months prior to the schedule week.

Resource Analysis Team – K. Kim

The following is a list of changes to the DSN Mission Planning Set:

- After launch the name of the MUSES-C spacecraft was changed to Hayabusa (Peregrine Falcon in Japanese)
- Launch date for MERA has changed to 06-05-03
- Launch date for SIRTf has changed to 08-27-03
- Rosetta was added to the Mission set 02-26-04 and EOPM 12-31-15
- Launch date for Deep Impact has changed to 12-31-04

For a complete listing of Ongoing and Advanced Planning projects visit the following link for the RAPSO website: <http://rapweb.jpl.nasa.gov/tmodmiss.pdf>

The following is a list of changes to the DSN Resource Implementation Planning Matrix:

- DSS-63 NSP installation completed 04-21-03
- DSS-45 NSP installation completed 05-03-03
- DSS-14 NSP installation completed 05-13-03
- DSS-54 NSP installation completed 05-13-03

For a complete listing of the DSN Resource Implementation visit the following link for the RAPSO website: <http://rapweb.jpl.nasa.gov/tmodplns.pdf>

The following special studies have been completed:

- DSS-27 Out-Of-Service Assessment Report
- SCIM Load Study
- MRO Extended Mission Load Study

RARB Status – N. Lacey

The RAPSO team has sent an email to Projects and users to download and verify requirements and events, and make necessary changes. Projects and users inputs are required by May 30,

2003, so that RAPSO can incorporate them in the RARB analysis process.

The RARB timeline has been modified to increase by 10 working days, the time period projects and users have to review the preliminary version of the RARB Redbook. The preliminary RARB Redbook will now be published on July 14, 2003, with responses due by August 5, 2003. This should allow more than enough time for Project/user review.

DSS Downtime Forecast – A. Andujo

The approved DSS-27 downtime for CCG installation task scheduled for week 21 of 2003 (May 21 – May 23, 2003) has been re-scheduled by mid-range scheduling, to week 28 of 2003 (July 09 - July 11).

Approved DSS-27 downtime for NSP implementation task previously scheduled for week 14 - 17 of 2004, has been proposed to be rescheduled to week 47 - 50 of 2004. A formal presentation will be made at the August 2003 RARB.

A request has been made to extend the approved DSS-43 Antenna Controller Replacement task weeks of 30 – 36 2005, by an additional three weeks. Proposals to accommodate this change will be sent to affected missions for approval. Final approval will be sought at the August 2003 RARB.

A request has also been made to extend the approved DSS-63 Antenna Controller Replacement weeks of 38 - 44 2005, by an additional three weeks. This downtime will be moved, as it now conflicts with the extended DSS-43 ACR downtime resources. This request is currently in planning, no dates have been identified yet.

The following is a new downtime request currently in planning with Mid-Range scheduling. No dates have been identified yet for this downtime:

<u>Requested Activity</u>	<u>Length</u>	<u>Timeframe</u>
DSS-43 Antenna Balancing	4 Days	Before 10-30-2003 (ACP Freeze)

Please see the attached Downtime report for complete listing of downtime or visit the following link on the RAPSO website: <http://rapweb.jpl.nasa.gov/planning.htm>

DSN Operations – J. Buckley

There was no presentation given at this month's JURAP.

Goldstone Solar System Radar – M. Slade

An opportunity to observe a binary Near-Earth asteroid was missed because DSS-14 was scheduled down. There are three upcoming Near-Earth Asteroid Observations of 1998 FH12, which have been scheduled for DOY 178-180 (June 17 – 29, 2003), and two of four Radio Speckle Displacement (RSD) observations have been requested. Both are Mercury Goldstone/GBT observations in support of the MESSENGER Project.

The MSPA DEMO with MGS has been rescheduled for DOY 146 (May 26, 2003), as the previous DEMO on DOY 087 had no GSSR transmissions due to a power failure, and an Operational Readiness Test (ORT) for Mars Interferometry has been scheduled for DOY 158 (June 7, 2003).

Dr. Slade discussed reviews from NRAO referees on proposed observations for the GSSR project. The proposals outline four observations of Mars over a 60-day period by GSSR/VLA. The recommendation from the NRAO referees was that these observations should be done. At this time, two observations are scheduled, but the other two conflict with currently scheduled VLBI supports. Dr. Slade and Albert Chang are working to resolve the conflict.

Radio Astronomy / Special Activities – G. Martinez

It was reported that two Clock Sync activities during the last month yielded 100% data capture. There were two Cat M&E activities. One suffered from RFI, and the other suffered from antenna elevation limits, but they still managed to gather 95% data.

The second of four Gravity Probe experiments with BR088A is scheduled to occur. This experiment will observe the source HR8703, which will be used as a guide star for the Gravity Probe-B mission.

Space Geodesy is scheduled for the end of May utilizing DSS-45. The Guest Observing activity BG134B experiment is scheduled for May 19, 2003. This is part two of a K-band dual polarization experiment to study water megamasers, in an attempt to map sub-parsec accretion disks of supermassive black holes. The PI reported that pointing at Goldstone was very bad during the first part of the experiment in April, due to inaccurate pointing models.

JURAP Science Advisor – E. Smith

There was no presentation given at this month's JURAP.

FLIGHT PROJECTS REPORTS

Ulysses – B. Brymer

There was no presentation given at this month's JURAP.

Stardust - R. Ryan

Mr. Ryan reported that NSP Demos were completed successfully with DSS-45 and DSS-14. On June 17-18, 2003, Stardust will perform Deep Space Maneuver 3 (DSM3). If it will be necessary, a cleanup maneuver is scheduled for July 17, 2003. Between these maneuvers, the Project will perform Entry Descent and Landing (EDL) tests.

Chandra – K. Gage

There was no presentation given at this month's JURAP.

Voyager – J. Hall

It was reported that both Voyager spacecraft are healthy and all operations are nominal. The Project is investigating the cause for the autonomous switch at this time. Overall DSN support was reported as good, although there have been some hardware and weather problems during support. Voyager has successfully completed NSP Demos with DSS14.

Cassini – D. Doody

The Cassini spacecraft successfully completed TCM, Huygens Probe Checkout #11, and the first set of OPNAV's were performed to evaluate the end-to-end system.

The Cassini spacecraft unexpectedly went into safing for the third time in its history Monday May 12, 2003. The cause was immediately recognized and cleanup efforts are in progress and are expected to be completed by May 17, 2003.

The 30-day Superior Conjunction Experiment scheduled to start in June is being modified in order to minimize the use of Reaction Wheel 3 (RWA-3), which has exhibited a friction problem.

As a result, the science objectives and DSN coverage requirements have been reduced. Cassini has also completed NSP Demos successfully with DSS-14 and DSS-25.

ISTP, WIND, POLAR, SOHO, GEOTAIL, Cluster II – A. Chang

There was no presentation given at this month's JURAP.

NOZOMI – M. Ryne

There was no presentation given at this month's JURAP.

MAP, ACE, and IMAGE, Genesis – S. Waldherr

There was no presentation given at this month's JURAP.

Mars Global Surveyor – E. Brower

There was no presentation given at this month's JURAP.

Mars Odyssey – B. Mase

April 7, 2003, marked the 2-year anniversary of the Mars Odyssey mission, and coincidentally, was the date the spacecraft completed its 5,000th mapping orbit. To date the total science data returned is approximately 155 Gigabytes. The data return is greater than expected due to DSN allocations working even better than planned, operations enhancements, and data compression.

INTEGRAL – D. Holmes

There was no presentation given at this month's JURAP.

Mars Exploration Rover – B. Compton

There was no presentation given at this month's JURAP.

The Cluster WBD Investigation: Science and Future Operations

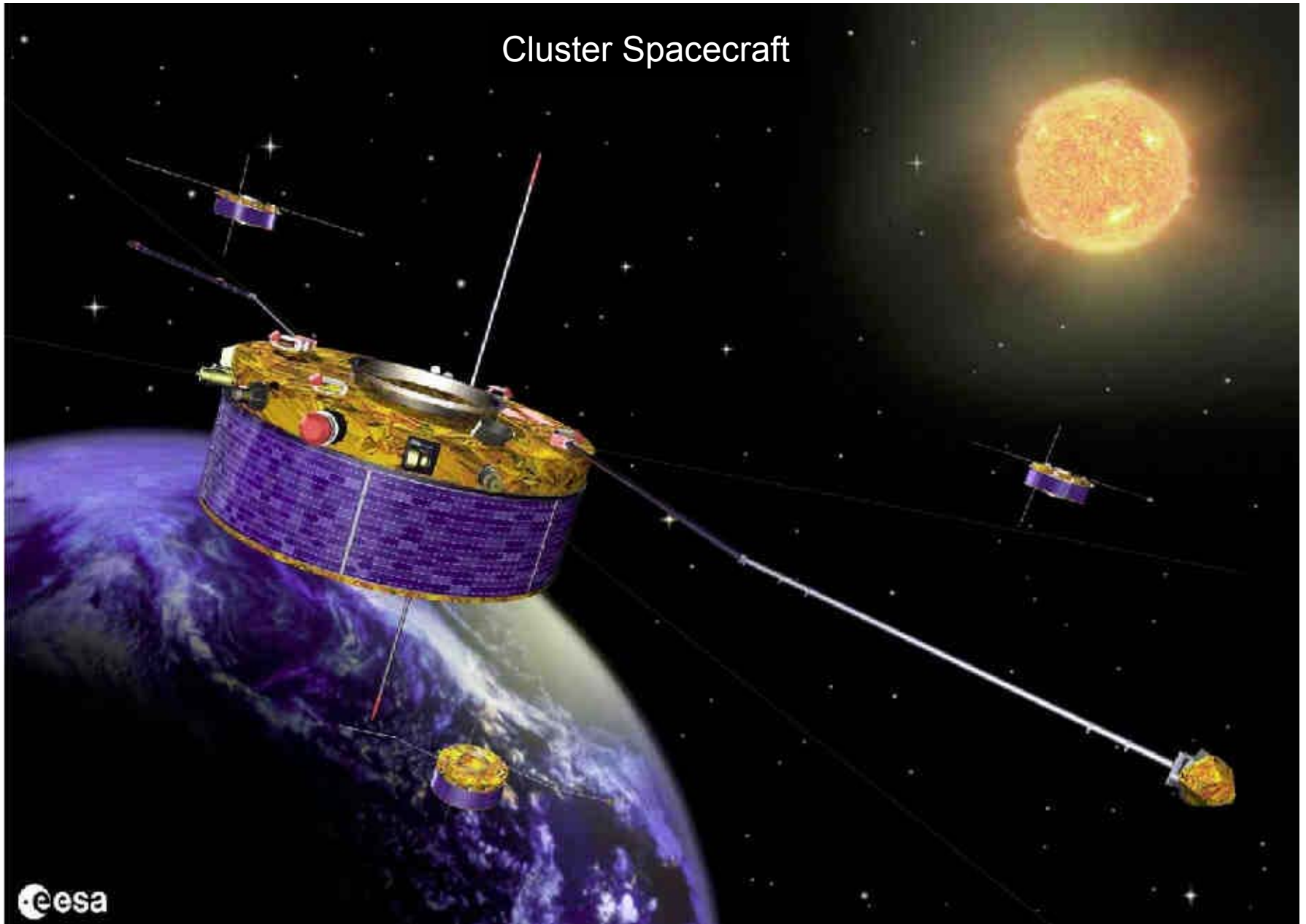
<http://sci.esa.int/home/clusterii/index.cfm>

by

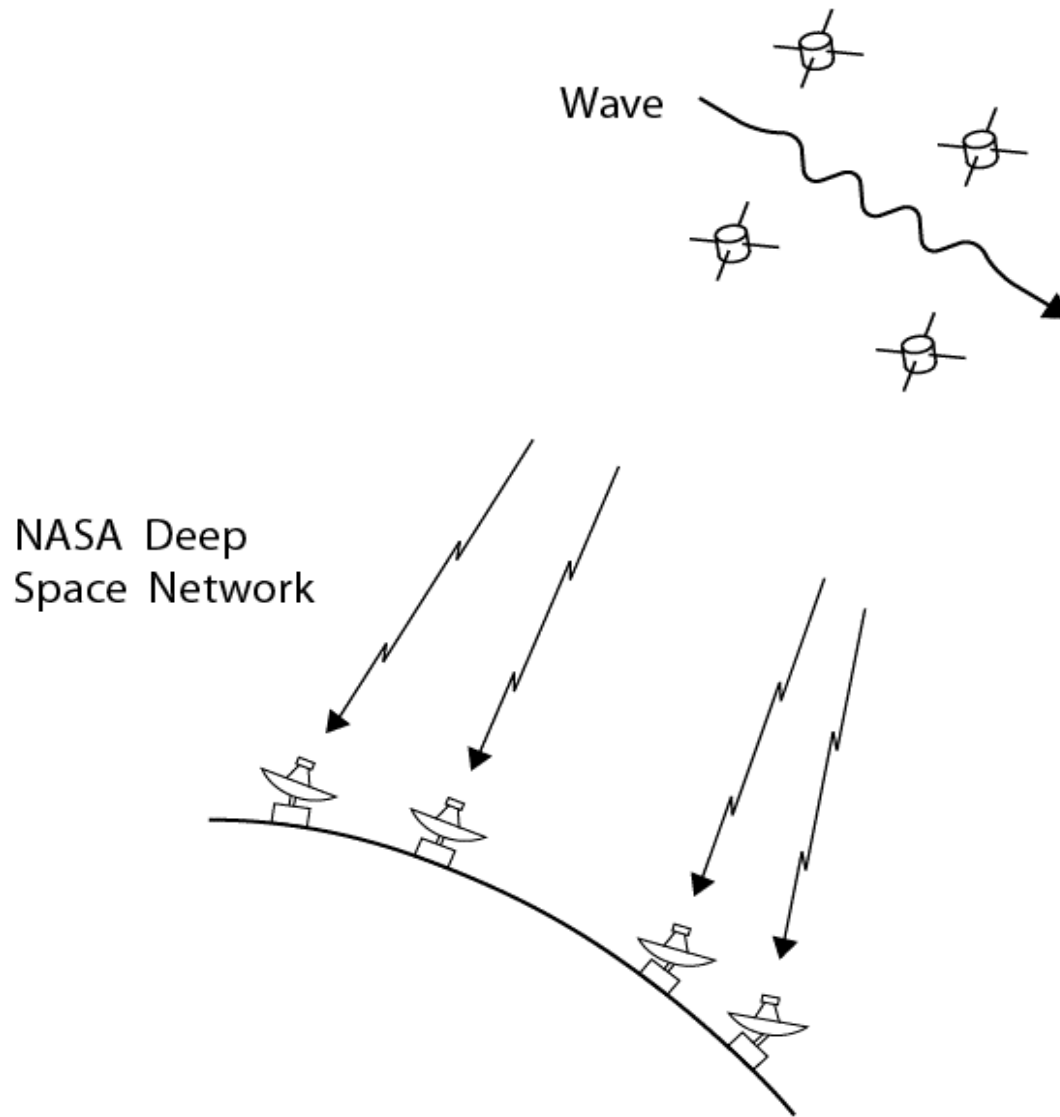
Donald A. Gurnett

Presentation to the JURAP Committee,
Jet Propulsion Laboratory, May 15, 2003

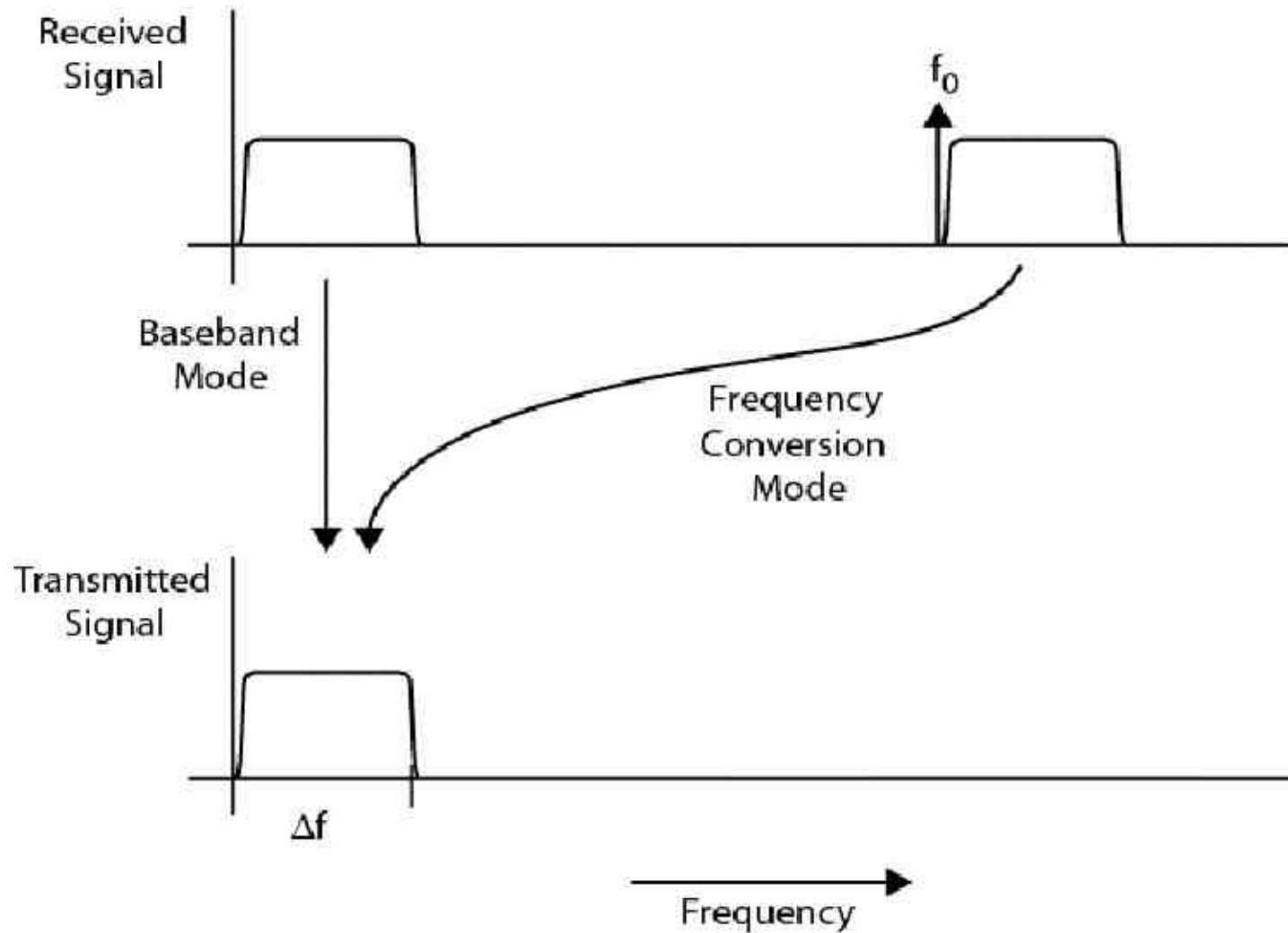
Cluster Spacecraft



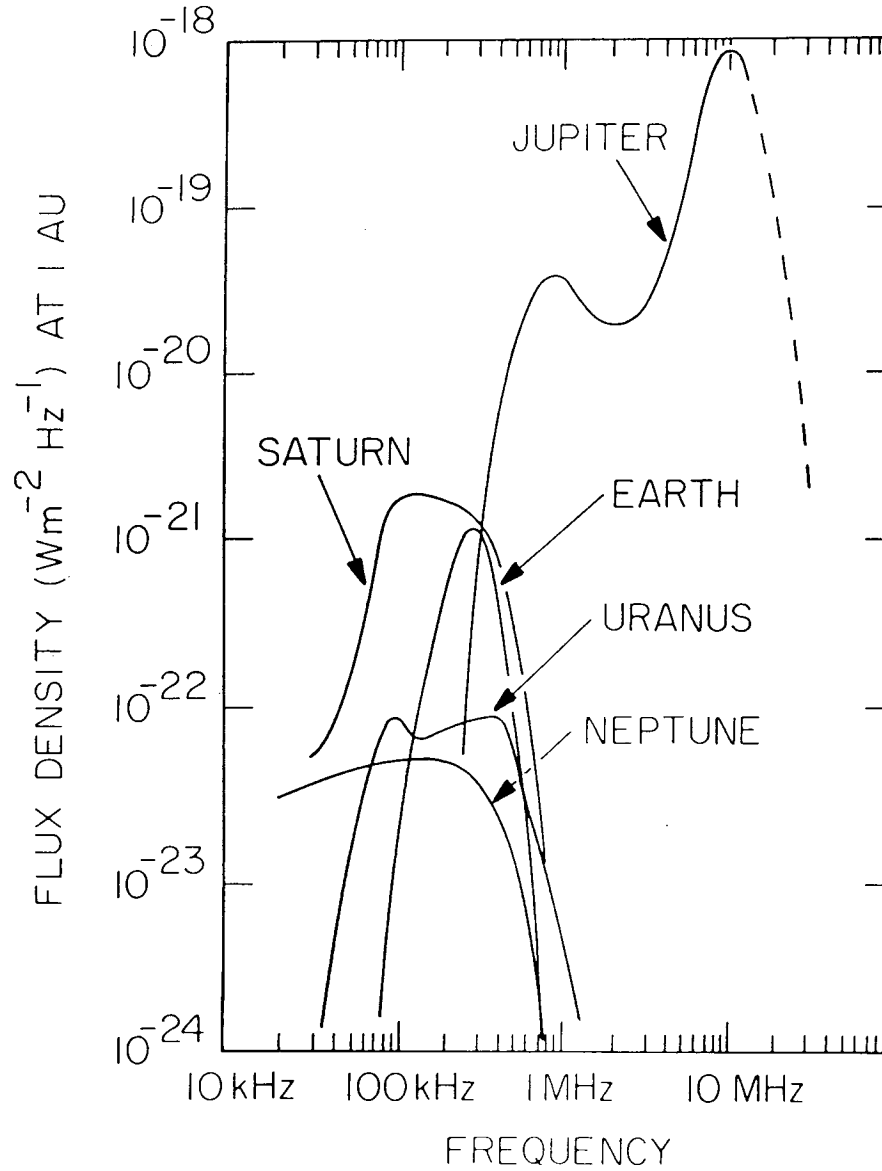
The Cluster WBD Investigation



The Cluster Wideband System

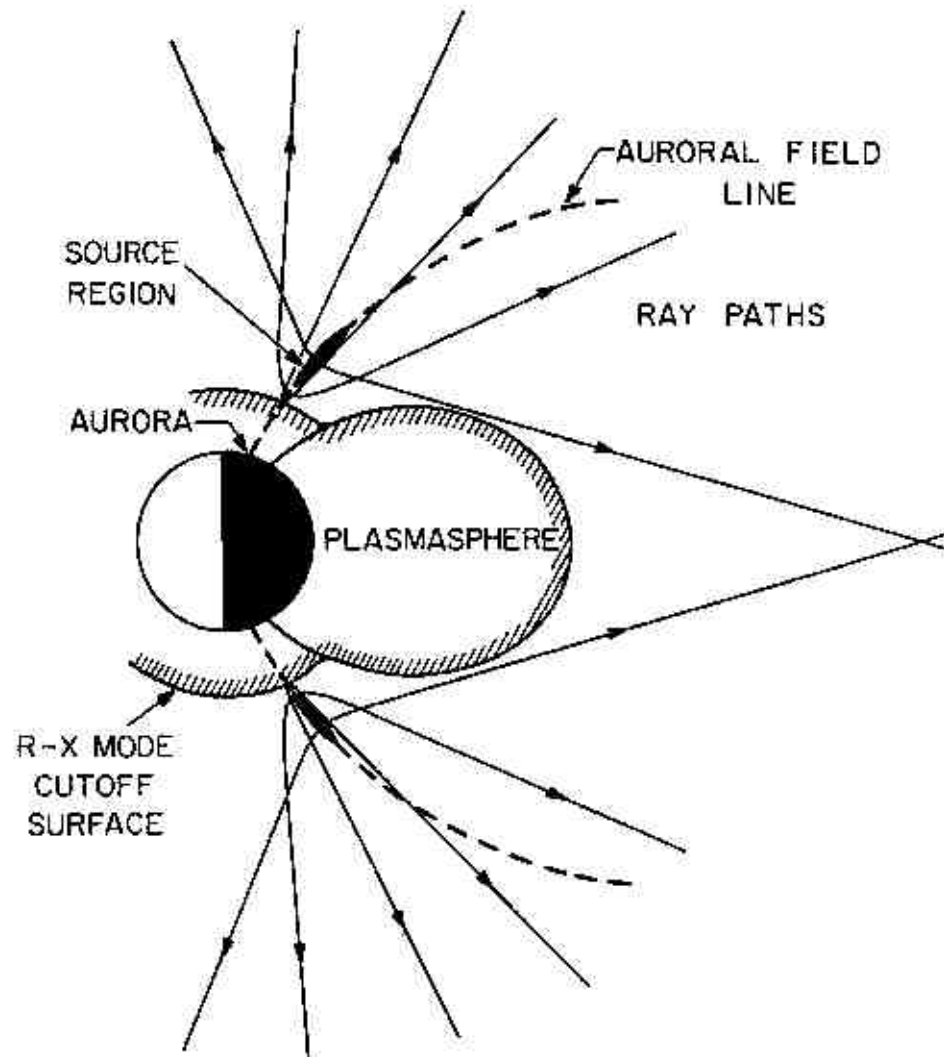


Planetary Radio Emissions

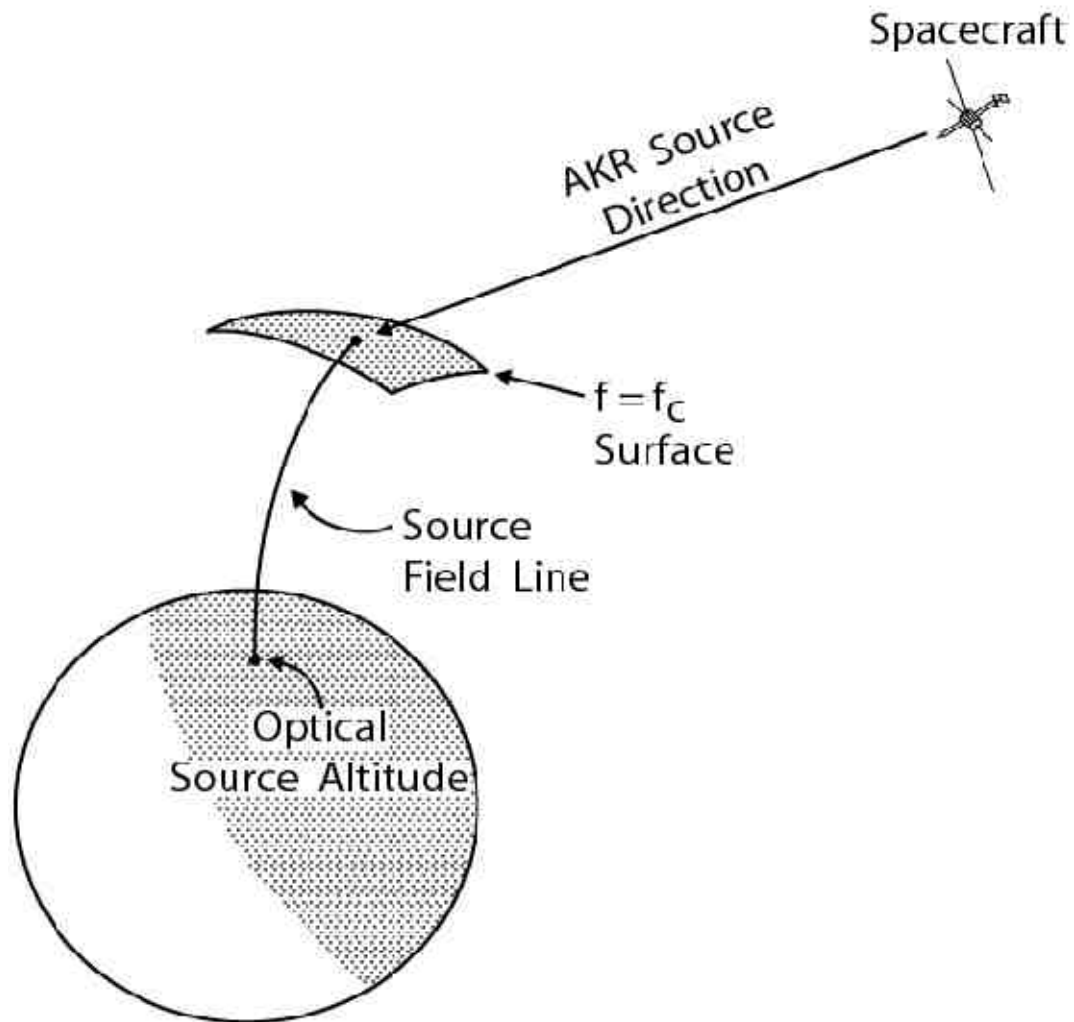


Terrestrial Auroral Kilometric Radiation

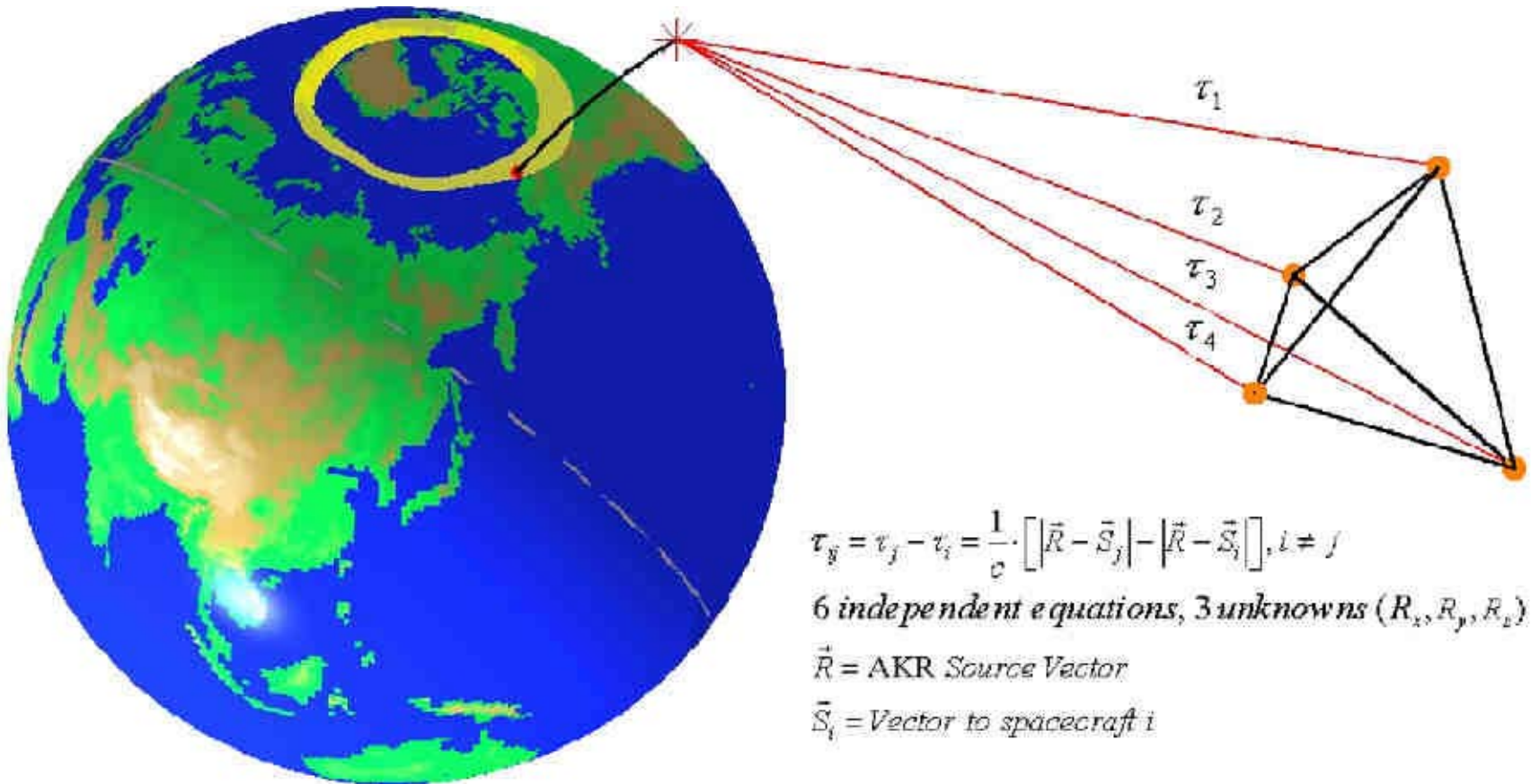
A-674-51-5



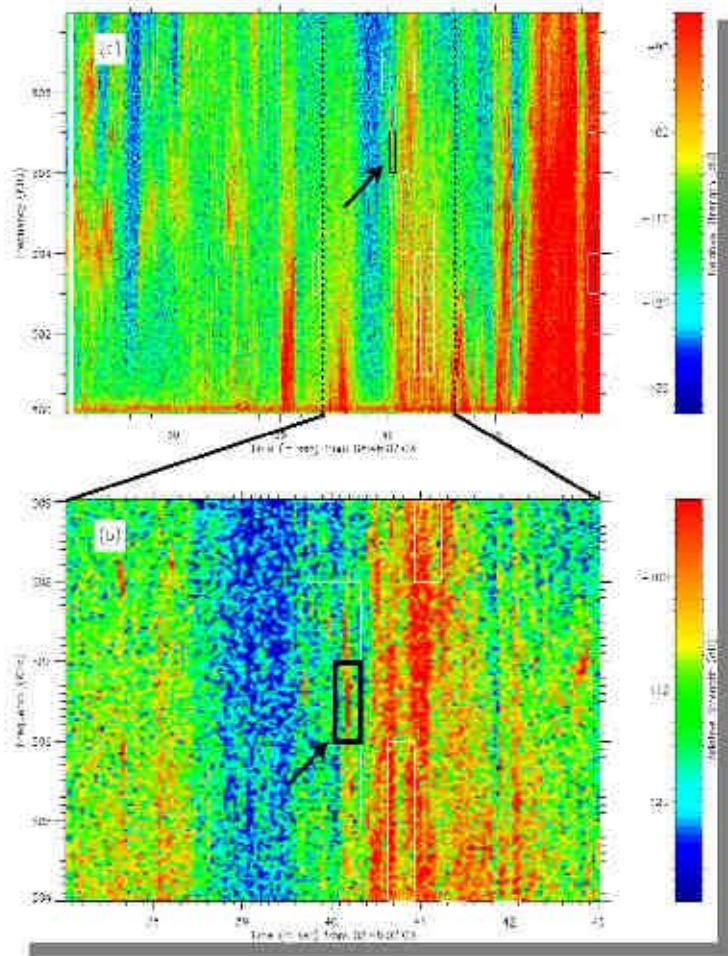
RELATIONSHIP OF AKR SOURCE TO AURORA



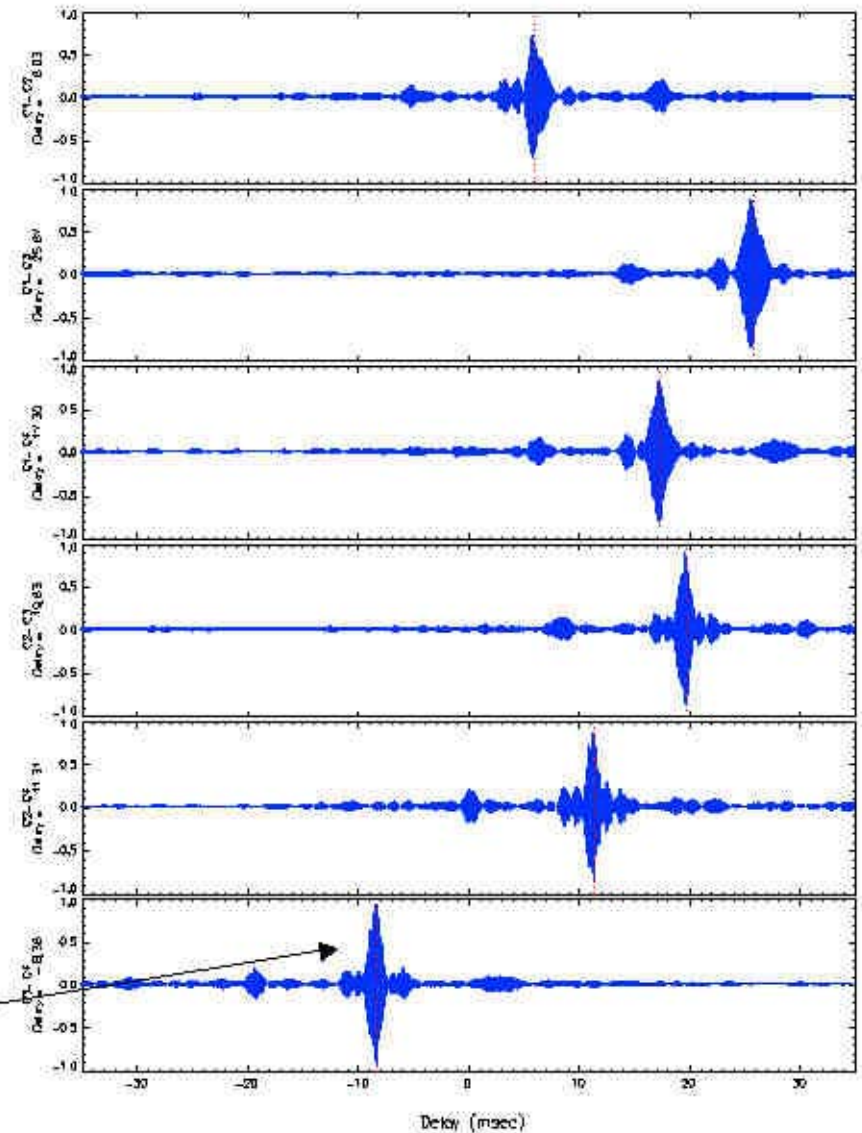
Differential delay algorithm for source location



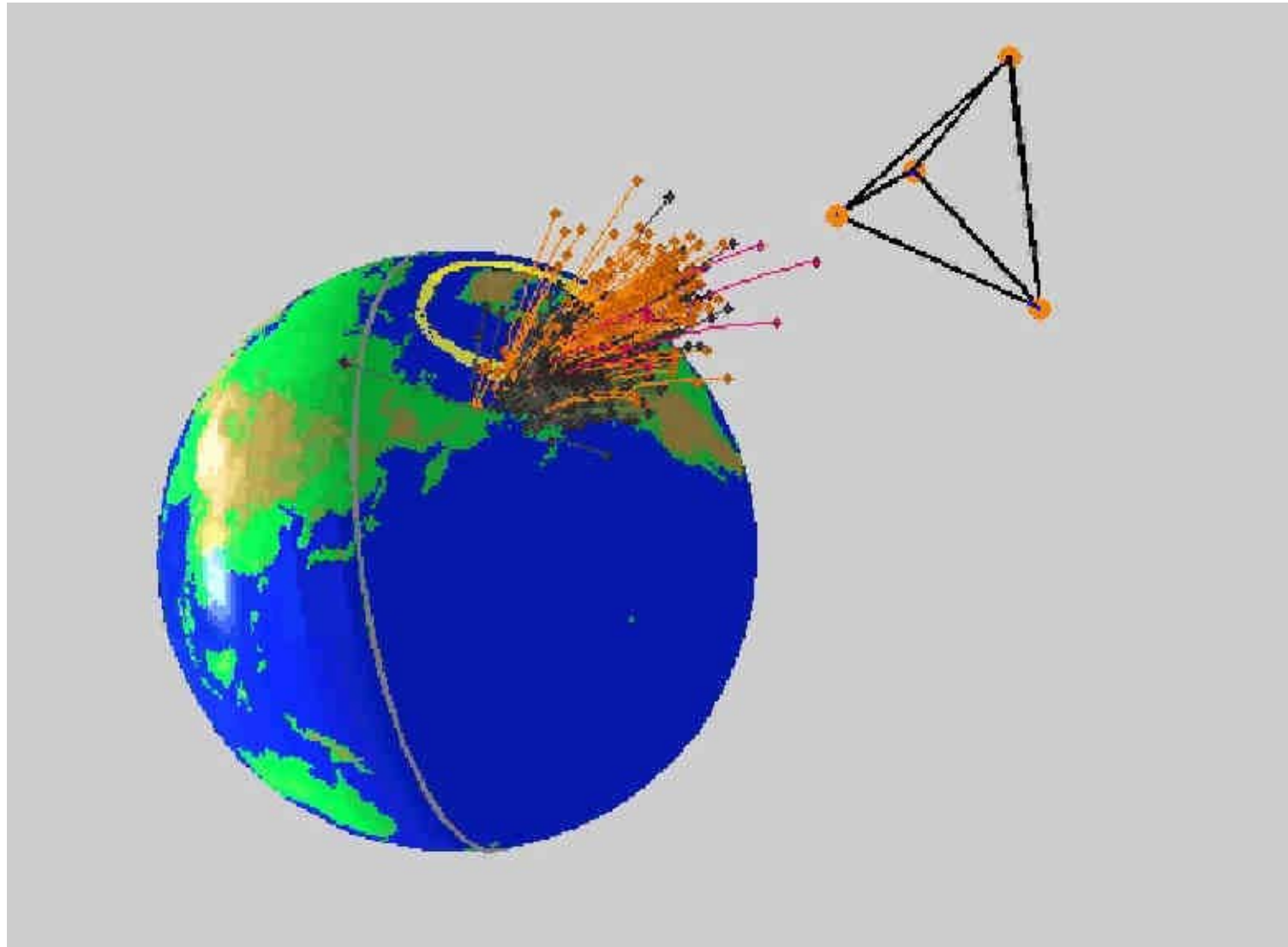
Sample Dynamic Spectrum, Waveform and Cross-correlation



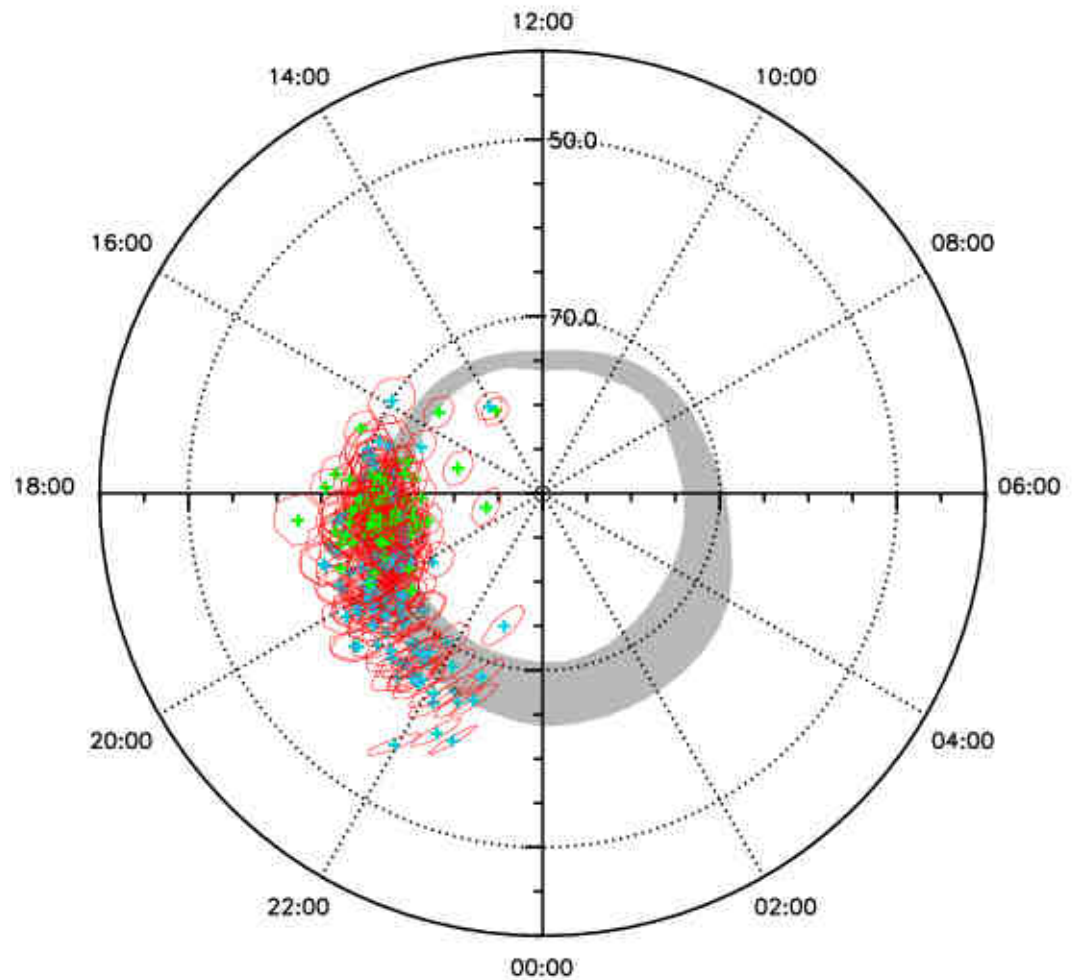
Peak is fit with Gaussian, delay uncertainty $\Delta\tau \sim 0.3$ ms



November 9 Locations: Varying Perspectives (Animation)

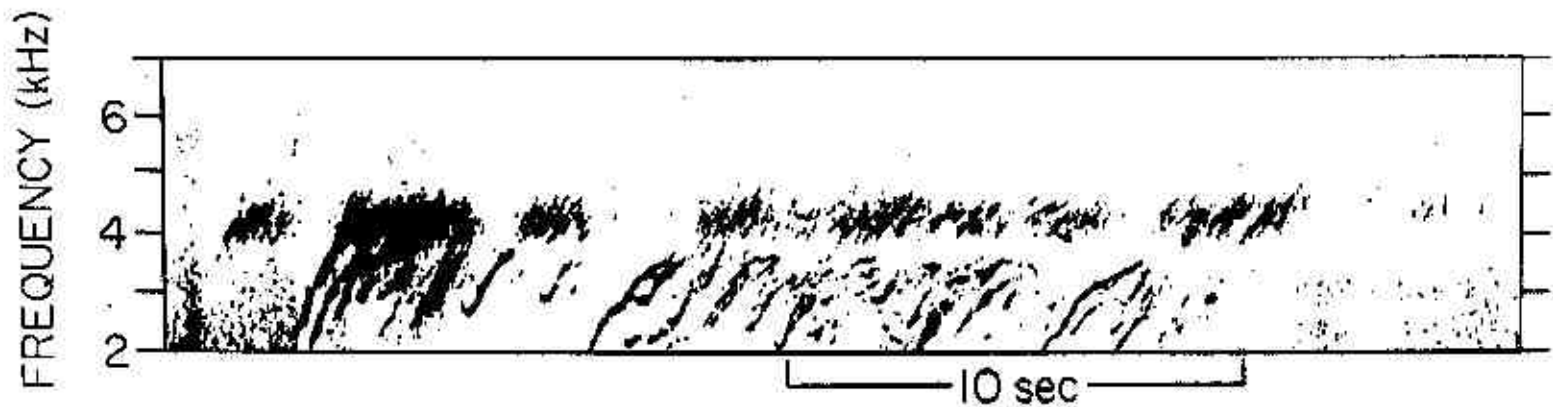


Example of AKR
Burst location with
Uncertainties
projected into
100km Altitude,
CGM coordinates
(29 Dec 02)

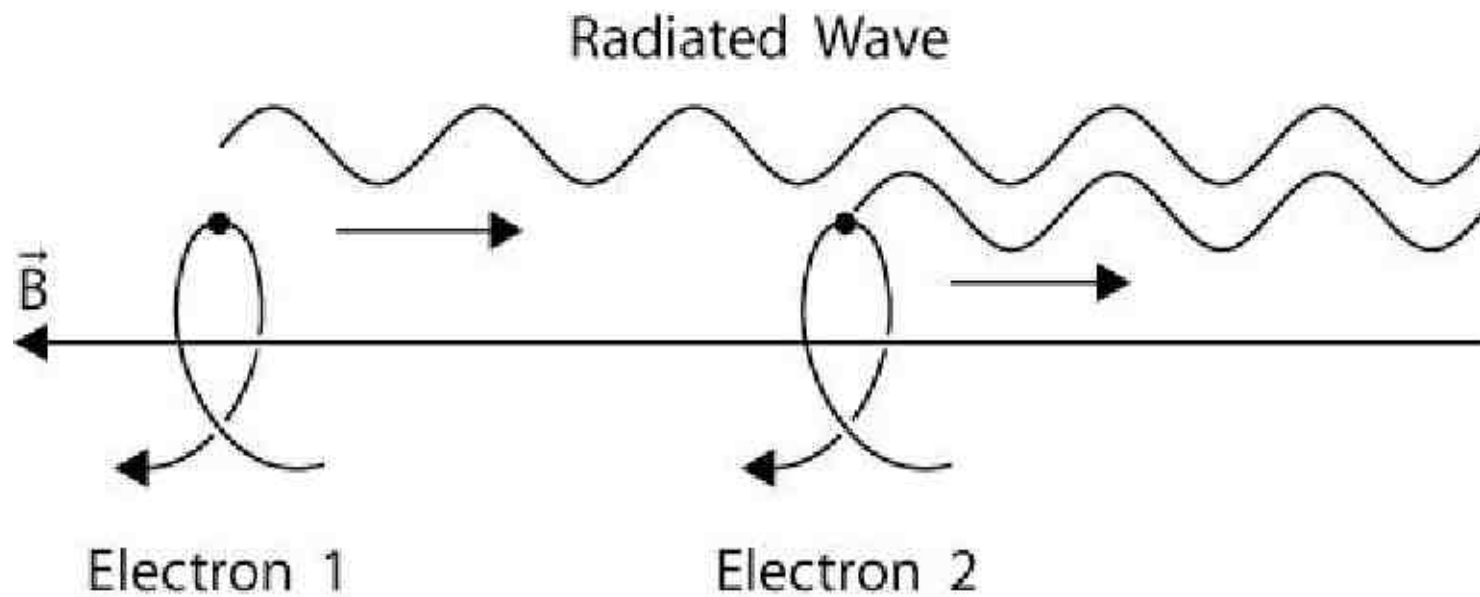


Dawn Chorus

A-G87-678

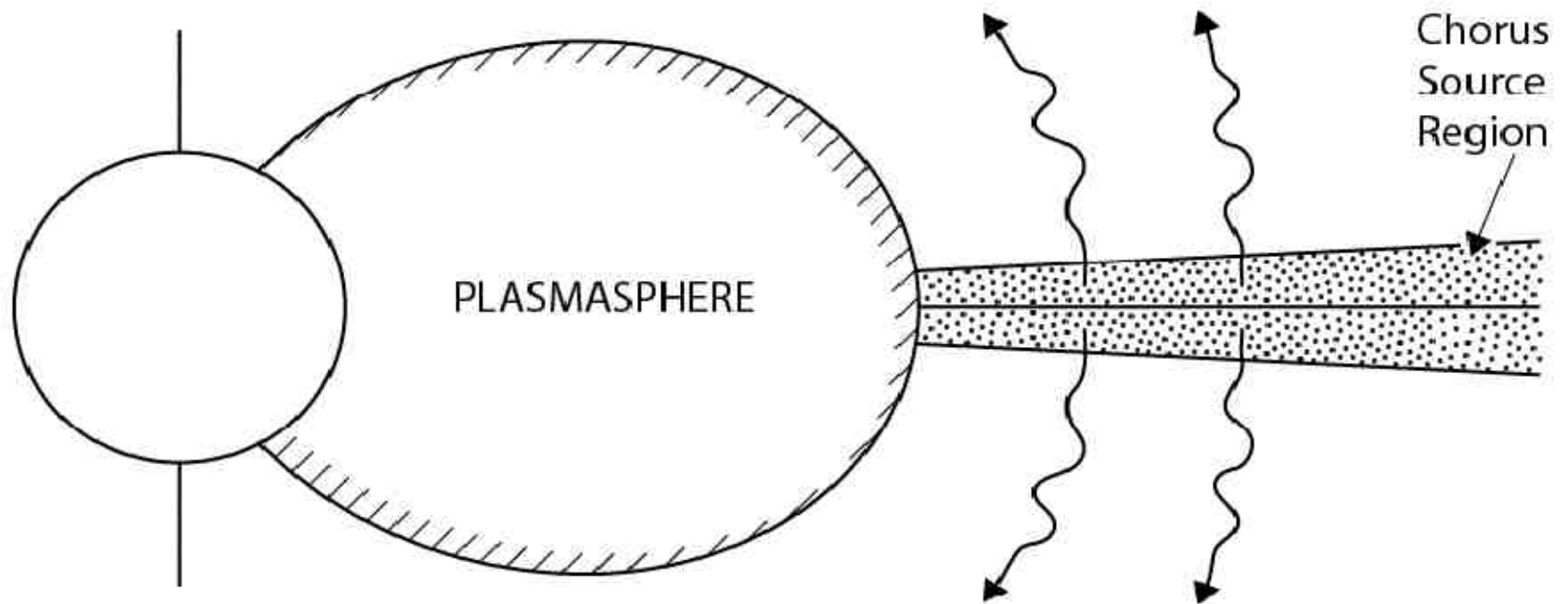


Chorus Generation



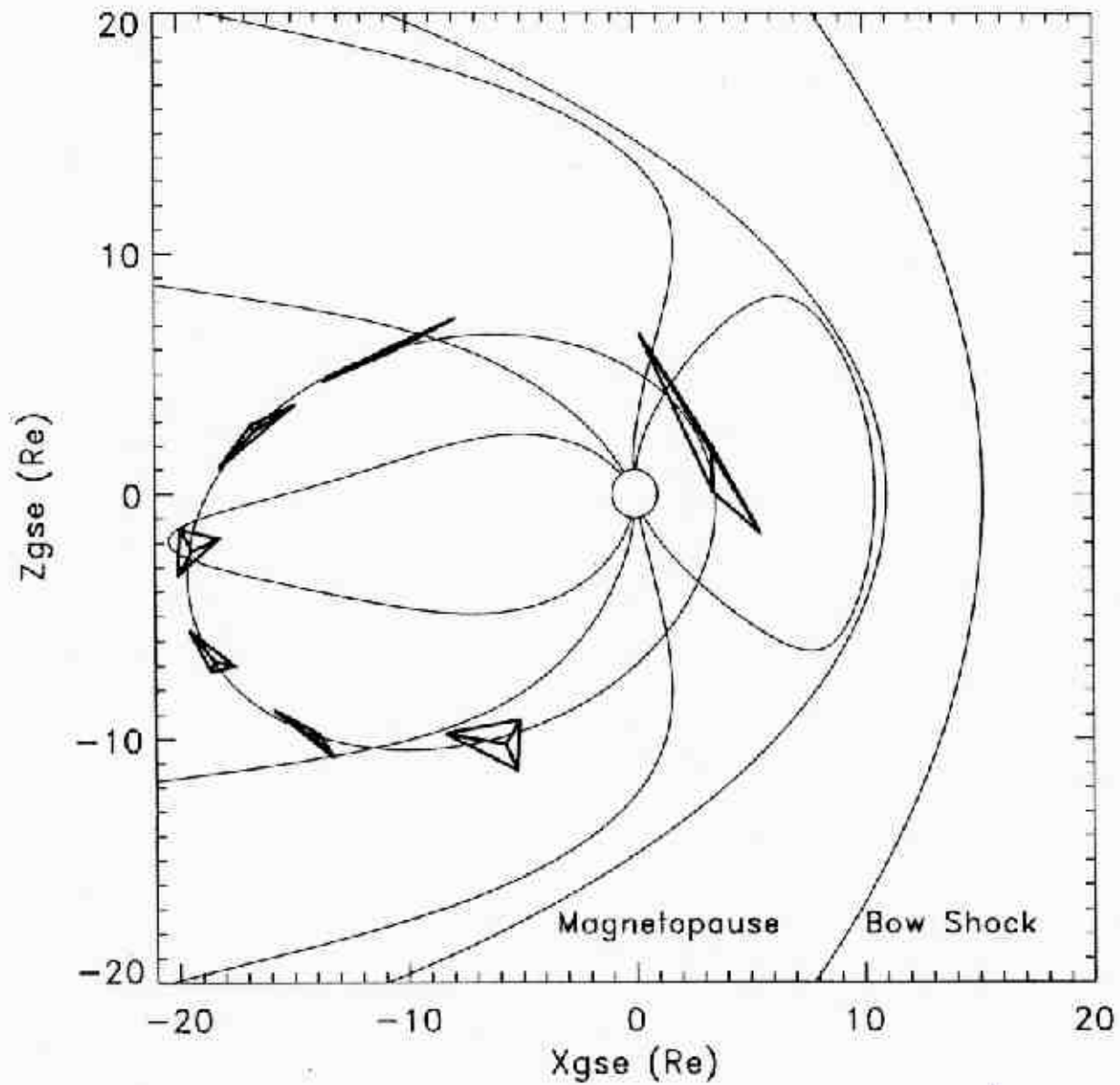
Chorus Source Region

A-D03-82-1



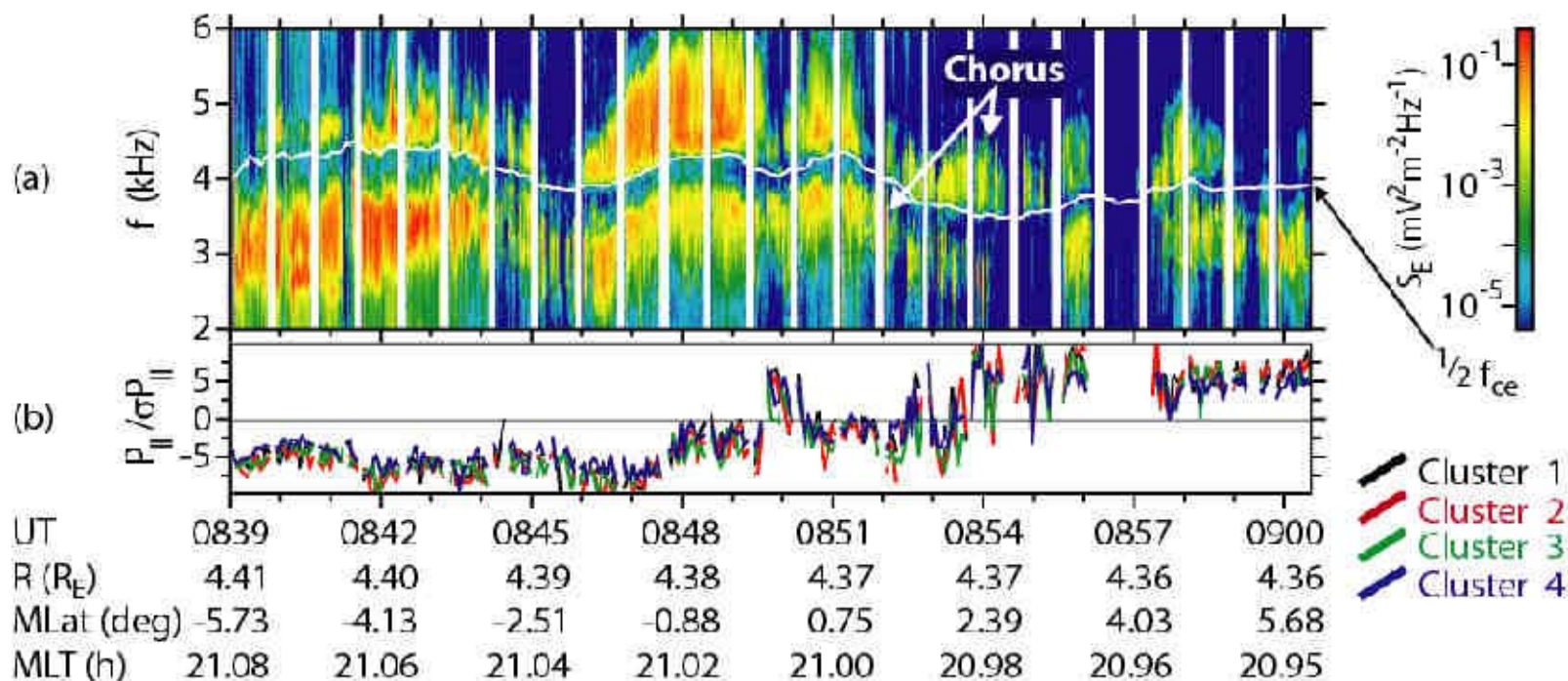
Cluster Orbit

P-03-4



Evidence of Equatorial Source

A-D03-84



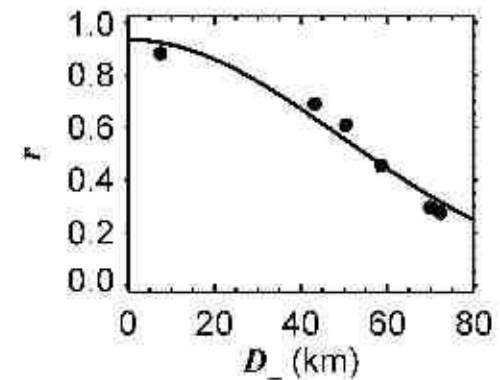
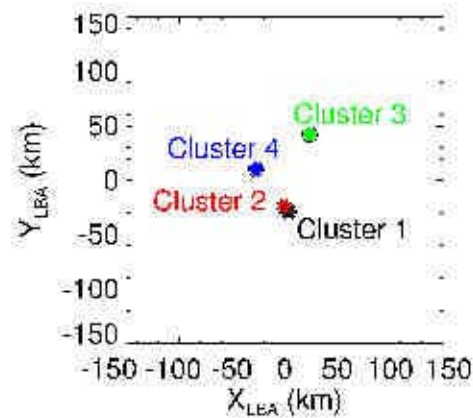
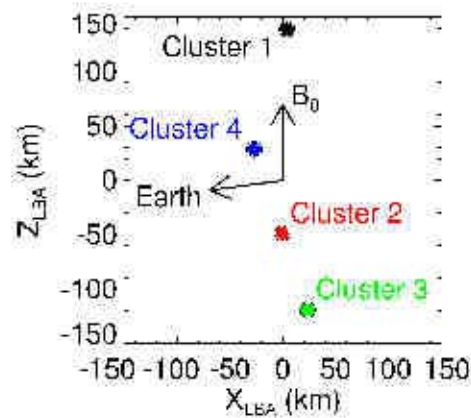
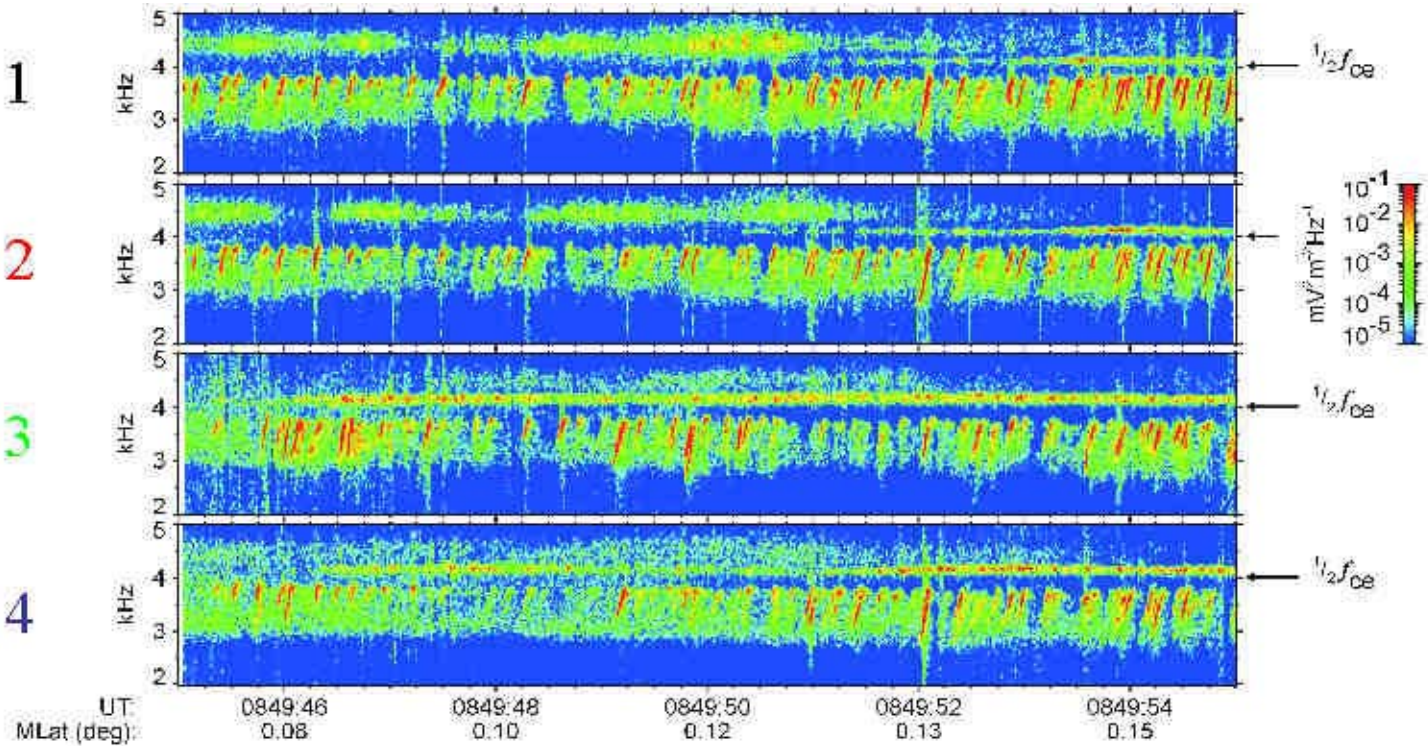
April 18, 2002

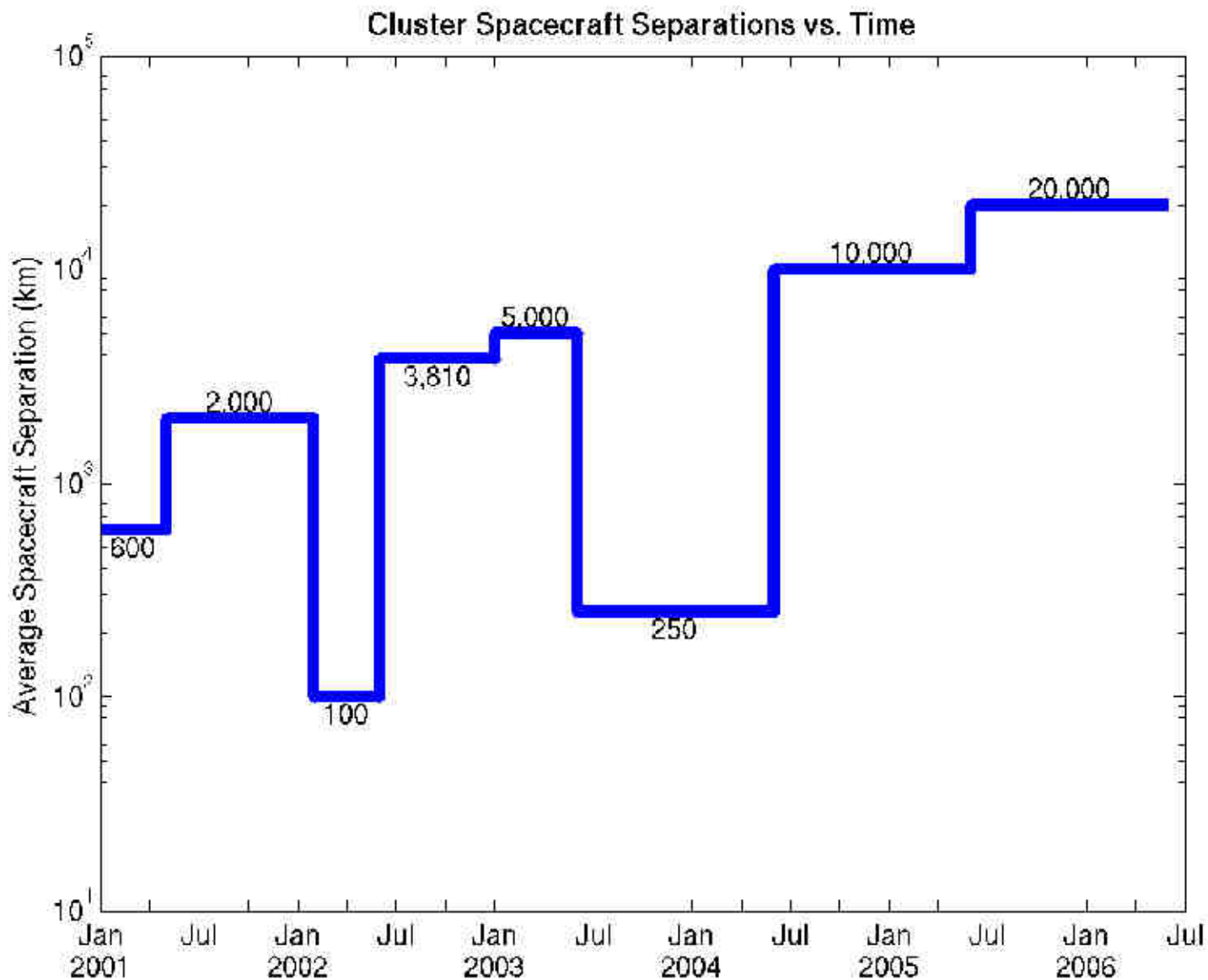
Cluster 1

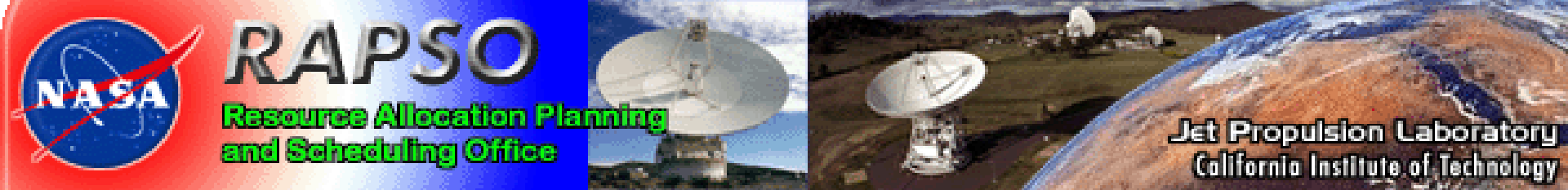
Cluster 2

Cluster 3

Cluster 4





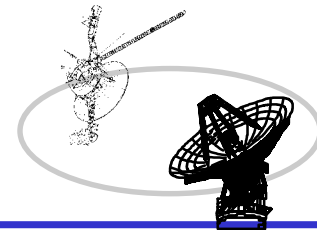
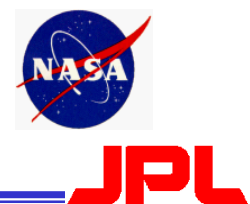


Joint Users Resource Allocation Planning (JURAP) Meeting

May 15, 2003

**Action Item Status
From August 13, 2002 and
February 11, 2003 RARB
(Resource Allocation Review Board)**

David G. Morris



Resource Allocation Planning & Scheduling Office (RAPSO)

Action Item Summary

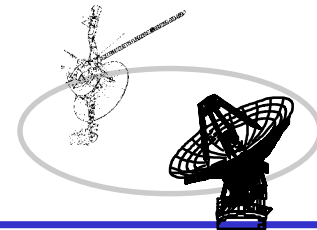
<i>AI#</i>	<i>Year</i>	<i>Month(s)</i>	<i>System</i>	<i>Responsible</i>	<i>Due Date</i>	<i>Status</i>
01	2003- 2004	December- April	Mars Program	B. Arroyo	06/01/2003	Open

ACTION: (aka 8/13/02 RARB A.I. #7) Multi-mission DSN Allocation and Planning (MDAP) provide a Mars Program coordinated input to Resource Allocation (Mid-Range) Planning Team (RAPT) of at least one week per week at least 6 months prior to the schedule week. This action will use the result of Action Item 6 to clarify the scope of resources in which to plan to.

<i>AI#</i>	<i>Year</i>	<i>Month(s)</i>	<i>System</i>	<i>Responsible</i>	<i>Due Date</i>	<i>Status</i>
02	2004 December	October-	RAPSO	S. Lineaweaver	04/20/2003	Closed

ACTION: Analyze proposed DSS-45 downtime (10/18/2004 – 12/05/2004) for Antenna Controller Replacement (ACR) and Microwave Switch Controller (USC).

RESPONSE: (3/20/03) Presentation of contention analysis approved at March 2003 JURAP meeting.



Resource Allocation Planning & Scheduling Office (RAPSO)

Action Item Summary

<i><u>AI#</u></i>	<i><u>Year</u></i>	<i><u>Month(s)</u></i>	<i><u>System</u></i>	<i><u>Responsible</u></i>	<i><u>Due Date</u></i>	<i><u>Status</u></i>
03	2005	April-May	Cassini	D. Seal	02/25/2003	Closed

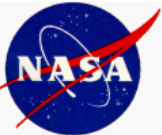
ACTION: Provide Cassini Occultation Plans regarding DSS-25 planned downtime.

RESPONSE: (02/18/03) Information provided showed Cassini's need for DSS-25 prior to February 19 and after April 30.

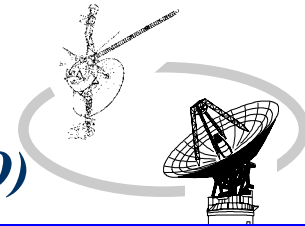
<i><u>AI#</u></i>	<i><u>Year</u></i>	<i><u>Month(s)</u></i>	<i><u>System</u></i>	<i><u>Responsible</u></i>	<i><u>Due Date</u></i>	<i><u>Status</u></i>
04	2005	July-August	Mars Express	T. Thompson	04/10/2003	Closed

ACTION: Provide impact to Mars Express requested weekly Bi-Static Radio Science requirement during planned DSS-43 downtime.

RESPONSE: (2/19/03) Mars Express requests that the Bi-Static experiments be moved to another 70M antenna in each week that DSS-43 is down. When using another 70M antenna, continue to use the same 70M antenna for several weeks versus having DSS-63 one week and DSS-14 the next



Interplanetary Network Directorate
DEEP SPACE MISSION SYSTEMS (DSMS)



JPL

Resource Allocation Planning & Scheduling Office (RAPSO)

JOINT USERS RESOURCE ALLOCATION PLANNING COMMITTEE



Resource Analysis Team

May 15, 2003

Kevin Kim

– Ongoing / Approved Projects –

Project	Acronym	Launch or Start	EOPM	EOEM
DSN Antenna Calibration	DSN	--	--	--
DSS Maintenance	DSS	--	--	--
European VLBI Network	EVN	--	--	--
Ground Based Radio Astronomy	GBRA	--	--	--
Reference Frame Calibration	DSN	--	--	--
Space Geodesy	SGP	--	--	--
Voyager 2	VGR2	08/20/77	10/15/89	09/30/07
Voyager 1	VGR1	09/05/77	12/31/80	09/30/07
Goldstone Solar System Radar	GSSR	04/01/85	--	--
Galileo	GLLO	10/18/89	12/07/97	09/21/03
Ulysses	ULYS	10/06/90	09/11/95	09/30/04
ISTP - Geotail	GTL	07/24/92	07/24/95	09/30/07
ISTP - Wind	WIND	11/01/94	11/01/97	09/30/07
ISTP - SOHO	SOHO	12/02/95	05/02/98	09/30/07
ISTP - Polar	POLR	02/22/96	08/23/97	09/30/07
Gravity Probe B	GPB	06/01/96	01/01/05	TBD
Mars Global Surveyor	MGS	11/07/96	02/01/01	01/03/08

– Ongoing / Approved Projects (continued) –

Project	Acronym	Launch or Start	EOPM	EOEM
Advance Composition Explorer	ACE	08/25/97	02/01/01	09/30/07
Cassini	CAS	10/15/97	06/30/08	06/30/10
Nozomi (Planet-B)	NOZO	07/03/98	12/31/05	TBD
Stardust	SDU	02/07/99	01/14/06	---
Chandra X-ray Observatory	CHDR	07/23/99	07/24/09	07/24/14
Imager for Magnetopause-to-Aurora Global Exploration	IMAG	03/25/00	05/30/02	09/30/07
Cluster 2 - S/C #2 (Samba)	CLU2	07/16/00	02/15/03	09/30/07
Cluster 2 - S/C #3 (Rumba)	CLU3	07/16/00	02/15/03	09/30/07
Cluster 2 - S/C #1 (Salsa)	CLU1	08/09/00	02/15/03	09/30/07
Cluster 2 - S/C #4 (Tango)	CLU4	08/09/00	02/15/03	09/30/07
2001 Mars Odyssey	M01O	04/07/01	08/24/04	05/29/08
Wilkinson Microwave Anisotropy Probe	WMAP	06/30/01	10/01/03	10/01/06
Genesis	GNS	08/08/01	09/08/04	---
Mission Enhancement by Ground-based Astronomy	MEGA	02/01/02	12/31/03	---
International Gamma Ray Astrophysics Lab	INTG	10/17/02	12/18/04	12/18/07
Hayabusa (MUSES - C)	MUSC	05/09/03	06/05/07	---
Mars Exploration Rover - A	MER2	06/02/03	04/06/04	05/11/04

– Ongoing / Approved Projects (continued) –

Project	Acronym	Launch or Start	EOPM	EOEM
Mars Express Orbiter	MEX	06/06/03	02/11/06	08/03/08
Mars Exploration Rover - B	MER1	06/25/03	04/27/04	06/15/04
Space Infrared Telescope Facility	STF	08/27/03	07/24/08	---
Rosetta	ROSE	02/26/04	12/31/15	---
Messenger	MSGR	03/10/04	04/06/10	---
Lunar - A	LUNA	08/14/04	04/11/05	---
Space Technology 5	ST5	11/19/04	02/27/05	TBD
Deep Impact	DIF	12/31/04	08/05/05	---
RadioAstron	RADA	03/15/05	06/15/10	TBD
Mars Reconnaissance Orbiter	MRO	08/10/05	12/31/10	12/31/15
Stereo Ahead	STA	11/15/05	02/18/08	---
Stereo Behind	STB	11/15/05	02/18/08	---

– Advanced / Planning Projects –

Project	Acronym	Launch or Start	EOPM	EOEM
New Horizons	NHPC	01/10/06	03/18/17	TBD
Dawn	DAWN	05/27/06	07/26/15	TBD
Mars Competed Scout 2007	M07S	08/19/07	08/23/08	08/22/10
Kepler	KPLR	10/01/07	07/31/11	TBD
Mars Telesat 2009	M09T	10/04/09	08/29/20	TBD
Mars Science Laboratory 2009	M09L	10/25/09	03/04/12	TBD
James Webb Space Telescope	JWST	08/01/11	07/31/16	TBD
Advanced Radio Interferometry between Space and Earth (ARISE)	ARSE	06/15/10	06/15/15	---
VLBI Space Observatory Programme (VSOP-2)	VSP2	06/15/10	06/15/15	---
Space Interferometry Mission	SIM	12/31/09	06/30/20	TBD
Mars CNES MSR Lander 2011	M11L	10/30/11	09/10/14	TBD
Mars CNES MSR Orbiter 2013	M13O	11/28/13	08/21/16	TBD

Station	Subnet	Delivery Date	S-Band Down	S-Band Up	X-Band Down	X-Band Up	20 kW X-Band	Ka-Band Down	Ka-Band Up	NSP
DSS-14	70M	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	TBD	N/A	05/16/03
DSS-15	34HEF	XXXX	XXXX	N/A	XXXX	XXXX	XXXX	TBD	N/A	XXXX
DSS-16	26M	XXXX	XXXX	XXXX	N/A	N/A	N/A	N/A	N/A	N/A
DSS-24	34BWG1	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	10/01/05	N/A	XXXX
DSS-25	34BWG2	XXXX	N/A	N/A	XXXX	XXXX	09/01/03	XXXX	XXXX	XXXX
DSS-26	34BWG2	XXXX	N/A	N/A	XXXX	XXXX	XXXX	XXXX	N/A	XXXX
DSS-27	34HSB	XXXX	XXXX	XXXX	N/A	N/A	N/A	N/A	N/A	12/12/04
DSS-34	34BWG1	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	01/01/05	N/A	XXXX
DSS-43	70M	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	TBD	N/A	XXXX
DSS-45	34HEF	XXXX	XXXX	N/A	XXXX	XXXX	XXXX	TBD	N/A	XXXX
DSS-46	26M	XXXX	XXXX	XXXX	N/A	N/A	N/A	N/A	N/A	N/A
DSS-54	34BWG1	XXXX	XXXX	XXXX	XXXX	XXXX	09/08/03	08/01/06	N/A	XXXX
DSS-55	34BWG2	11/01/03	N/A	N/A	11/01/03	11/01/03	11/01/03	11/01/03	N/A	11/01/03
DSS-63	70M	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX	TBD	N/A	XXXX
DSS-65	34HEF	XXXX	XXXX	N/A	XXXX	XXXX	XXXX	TBD	N/A	XXXX
DSS-66	26M	XXXX	XXXX	XXXX	N/A	N/A	N/A	N/A	N/A	N/A

XXXX = Capability Currently Exists

N/A = Capability Not Planned

05/15/03

◆ RESOURCE NEGOTIATION STATUS

- 2003 WEEKS 26 – 28 (THRU 07/13/2003) RELEASED TO DSN ON 05/13/2003.
- 2003 WEEKS 29 – 32 (THRU 08/10/2003) DUE TO BE RELEASED ON 05/23/2003.
- 2003 WEEKS 40 – 44 (THRU 11/02/2003) WILL GO INTO NEGOTIATIONS STARTING 06/20/2003.

◆ SPECIAL STUDIES/ACTIVITIES

- 70M LIFE EXTENSION DOWNTIME ASSESSMENT
- DSS-27 OUT-OF-SERVICE ASSESSMENT REPORT
- SAMPLE COLLECTION FOR INVESTIGATION OF MARS (SCIM)
- SPACE INTERFEROMETRY MISSION (SIM)
- ULYSSES EXTENDED MISSION LOAD STUDY

◆ ON-GOING ACTIVITIES

- MADB/TIGRAS TESTING AND TRAINING
- DOWNTIME PLANNING
- LUNAR-A LOAD STUDY – MISSION REPLAN
- ROSETTA LOAD STUDY – MISSION REPLAN
- SIRTf IMPACT STUDY – LAUNCH CHANGE
- ST5 LOAD STUDY

◆ **RARB - AUGUST 12, 2003**

- LOADING PROFILE LETTER DISTRIBUTED
- NEW TIMELINE POSTED
- REQUIREMENTS AND EVENTS POSTED
- COB MAY 30, 2003 IS DEADLINE FOR MISSION RESPONSES
- ANALYSES BEGINS JUNE 2, 2003

[HTTP://RAPWEB.JPL.NASA.GOV](http://rapweb.jpl.nasa.gov)

Resource Allocation Review

2004 – 2013

August 12, 2003

TIMELINE

<u>Calendar Date</u>	<u>Work Days Remaining</u>	<u>Milestones</u>
05/08/03	66 Days	Distribute Mission Set, Major Events and User Loading Profiles to Projects/Users for verification
05/30/03	51 Days	Deadline for Projects/Users response to Mission, Set, Major Events, and User Loading Profiles Last Day for Trajectory or Viewperiod updates and submissions
06/02/03	50 Days	Start preliminary requirements analysis and recommendations
07/14/03	21 Days	Post preliminary contentions/Recommendations on the RAPWEB for Projects/Users review
07/16/03	19 Days	NASA Headquarters Science Review
08/05/03	5 Days	Complete Projects/Users Review
08/07/03	3 Days	Post final Contentions and Recommendations on the RAPWEB
08/11/03	1 Day	Distribute booklets to RARB Board Members
08/12/03		Resource Allocation Review Board Meeting

DSN Antenna Downtime Status and Forecast



<http://rapweb.jpl.nasa.gov/planning>

Antenna Downtime Status and Forecast

New Downtime Request

<u>Requested Activity</u>	<u>Length</u>	<u>Timeframe</u>
DSS-43 Antenna Balancing	4 Days	Before 10-30-2003

The above request is currently in planning with Mid-Range scheduling, no dates have been identified yet for this downtime.

Antenna Downtime Status and Forecast

Changes to Approved Downtime

- ❑ Approved DSS-27 downtime for CCG installation task previously scheduled for week 21 of 2003 (May 21 – May 23) has been rescheduled to week 28 of 2003 (July 09 – July 11)
- ❑ Approved DSS-27 downtime for NSP implementation task previously scheduled for week 14 - 17 of 2004 has been proposed to be rescheduled to week 47 - 50 of 2004
- ❑ A request has been made to extend the approved DSS-43 Antenna Controller Replacement weeks 30 - 36 2005 by an additional three weeks
- ❑ A request has been made to extend the approved DSS-63 Antenna Controller Replacement weeks 38 - 44 2005 by an additional three weeks

At this time it looks probable that the DSS-43 Antenna Controller Replacement can be extended without any major contentions, but the DSS-63 Antenna Controller Replacement will most likely be moved to another time possibly in 2006.

Changes to the DSS-27 NSP and DSS43 and DSS63 ACR's will be announced during following JURAP meetings then presented at the August 2003 RARB for approval.

Antenna Downtime Status and Forecast

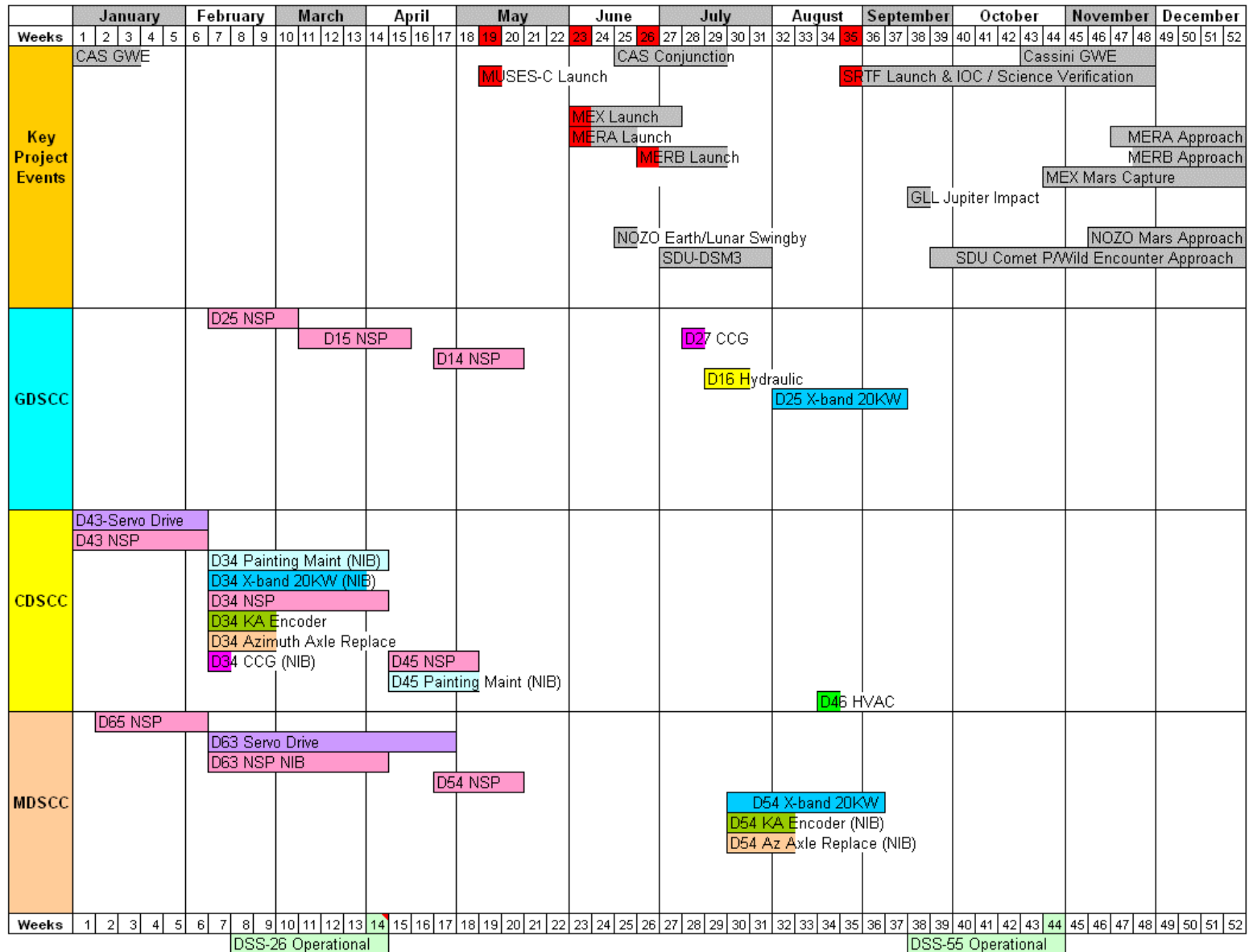
Downtime Proposals

The following is a list of Downtime proposals to be presented at the August 2003 RARB:

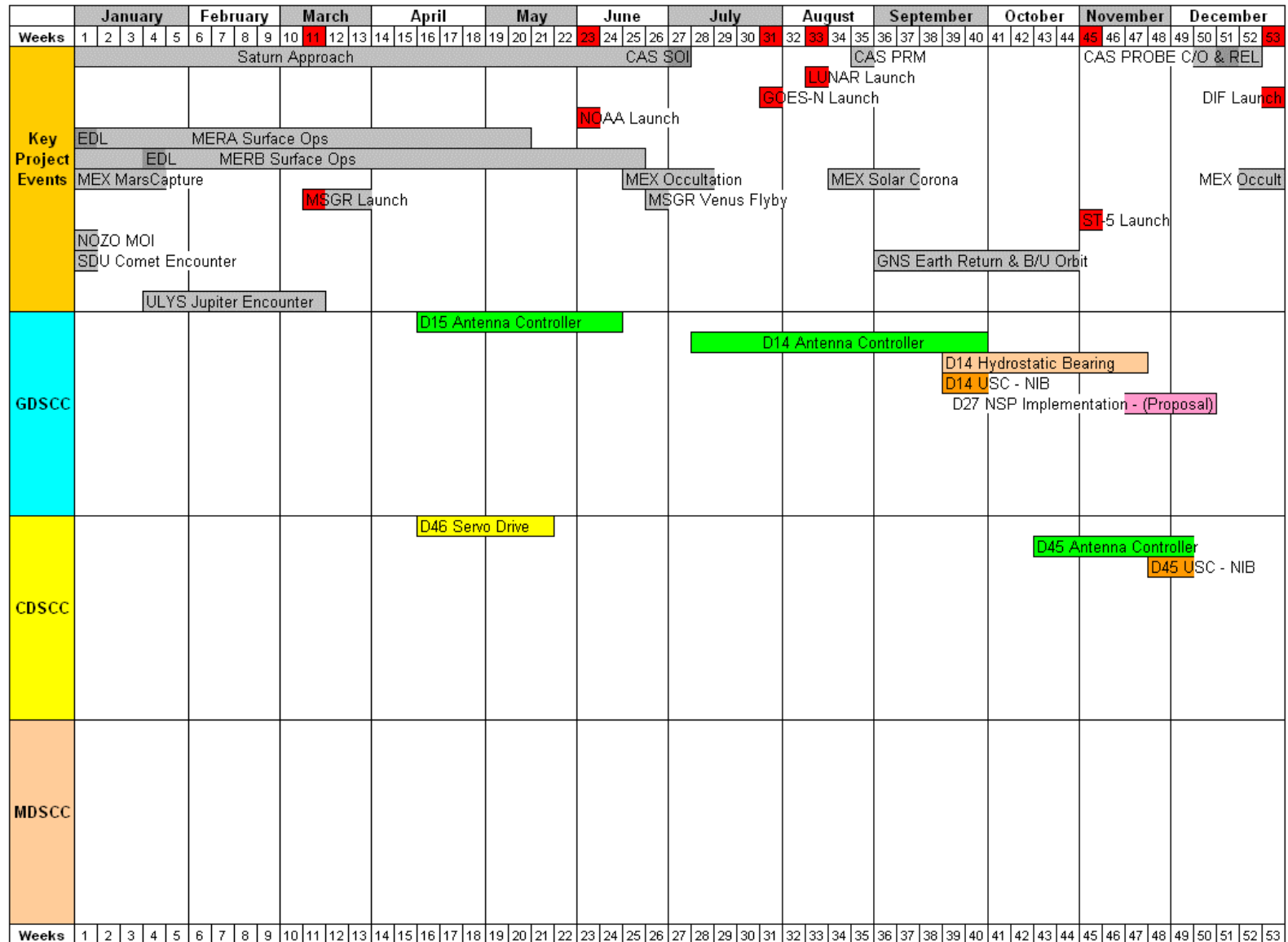
<u>Requested Activity</u>	<u>Length</u>	<u>Timeframe</u>
DSS-45 Life Extension (Part 1)	12 Wks	Weeks 31 – 42 2004
DSS-45 Life Extension (Part 2)	5 Wks	Weeks 03 – 07 2005
DSS-65 Relocation and Revitalization	9 Wks	Weeks 15 – 23 2005
DSS-65 Life Extension (NIB to above)		
DSS-15 Life Extension (Part 1)	11 Wks	Weeks 25 – 35 2006
DSS-15 Life Extension (Part 2)	10 Wks	Weeks 43 – 52 2006

The dates above are preliminary and subject to change. Final dates will be presented at the August 2003 RARB for approval.

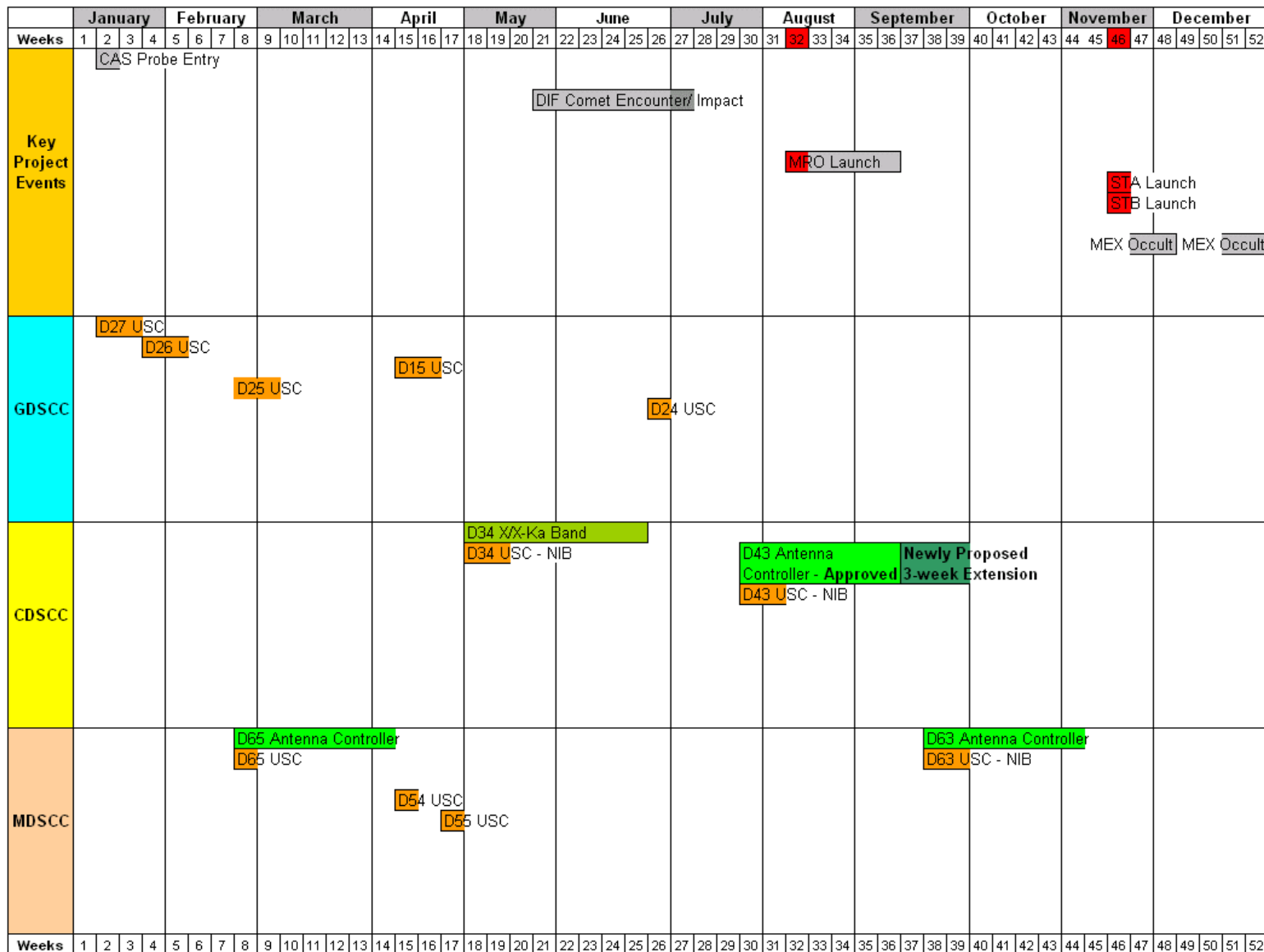
Antenna Downtime Status And Forecast 2003



Antenna Downtime Status And Forecast 2004



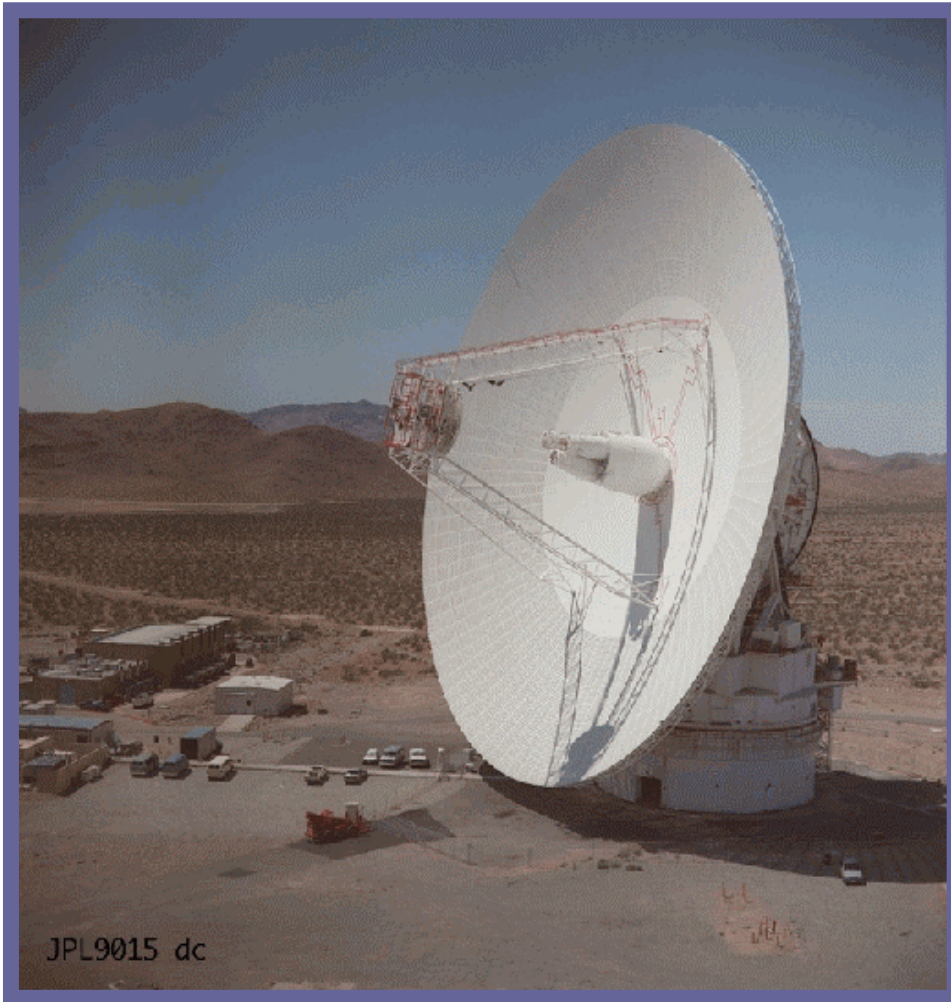
Antenna Downtime Status And Forecast 2005



Antenna Downtime Status And Forecast 2006

	January				February				March				April				May				June				July				August				September				October				November				December							
Weeks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
Key Project Events	SDU Entry																																																			
	MRO Approach / MOI																																																			
													MRO Aerobraking																Prime Science / Solar Conjunction																							
																																					MRO MAPPING															
									MSGR Venus FB2																																MEX Solar Corona											
																						DAWN Launch																														
GDSCC																																		D24 XX-Ka Band																		
CDSCC																																																				
MDSCC																																																				
Weeks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52

Goldstone Solar System Radar



JPL9015 dc

Martin A. Slade

May 15, 2003

NASA Jet Propulsion Laboratory

Joint Users Resource Allocation Planning Committee Meeting



Goldstone Solar System Radar (GSSR)



UPCOMING GSSR OBSERVATIONS

- The GSSR MSPA DEMO with MGS on DOY 087 rescheduled for DOY 146 (May 26):

*-----											
*DAY	START	BOT	EOT	END	FACILITY	USER	ACTIVITY	PASS	CONFIG/	WRK A C	
*								NO.	SOE	CAT R F	
*-----											
146	0725	0925	1715	1745	DSS-25	GSSR	GSSR MSPA DEMO		NONE	1B5	
146	0725	0925	1715	1745	DSS-25	MGS	GSSR MSPA DEMO	2395	N702	- 1A2	
146	0740	0910	1430	1500	DSS-14	GSSR	MARS CW X-TX		T012	1B5	

- Mercury Goldstone/GBT observations in support of the MESSENGER Project:

147	1600	1730	2105	2135	DSS-14	GSSR	MERC/GBT XTX		T012	1B5	
152	1735	1905	2035	2105	DSS-14	GSSR	MERC/GBT XTX		T012	1B5	

- Operational Readiness Test for Mars Interferometry:

158	1725	1855	2130	2200	DSS-25	GSSR	MERC INFRMY		NONE	1B5	
158	1725	1855	2130	2200	DSS-14	GSSR	MERC INFRMY XTX		T012	1B5	
158	1725	1855	2130	2200	DSS-13	GSSR	MERC INFRMY		NONE	1B5	

- Near-Earth Asteroid Observations on 1998 FH₁₂:

178	0805	0935	1735	1805	DSS-14	GSSR	AST1998FH12 XTX		T012	1B5	
179	0845	1015	1815	1845	DSS-14	GSSR	AST1998FH12 XTX		T012	1B5	
180	0925	1055	1855	1925	DSS-14	GSSR	AST1998FH12 XTX		T012	1B5	



Goldstone Solar System Radar (GSSR)



VLA Referees' Reports on Goldstone/VLA Mars Observations

From schedsoc@pinon.aoc.nrao.edu Wed May 7 11:29 2003 MDT

To: marty@shannon.jpl.nasa.gov

Cc: schedsoc@pinon.aoc.nrao.edu

Subject: VLA/VLBA referee reports

This email contains SPECIFIC information about all current VLA/VLBA proposals on which your name appears. This specific information is being sent to you by email only. **Please note that in the referee ratings, low numbers are good and high numbers are bad, with 1 being best.**

PROPOSAL CODE: AB1096

PROPOSAL TITLE: Goldstone/VLA radar observations of Mars

PROPOSAL STATUS (05/07/03): Time is scheduled for the A array configuration.

Authors: B. Butler, M. Slade, A. Haldemann, D. Muhleman

CURRENT TIME ALLOCATION:

4 times 8.0 hrs in A config centered at LST near 22.5

Time requested:

4 times 8.0 hrs in A config centered at LST near 22.5

Referee A Rating= 1.0 Time rec= 100 % Ref mean 2.6 Time recommended: 32h, as requested

Comments: The proposers have elucidated clearly this opportunity for observing Mars and why this opportunity/configuration is best. The work is a follow-on to earlier research during previous opportunities, and it represents a chance to discern and characterize some intriguing properties that will provide a distinct enhancement of the NASA-wide exploration of the planetary surface and atmosphere by current and future in-situ rovers and orbiter remote sensing instruments. The proposers, Muhleman in particular, have a sterling reputation for carrying out successful Goldstone-VLA observations in the past.

Referee B Rating= 1.0 Time rec= 100 % Ref mean 2.4 Time recommended: 32h, as requested

Comments: This is an incredibly important set of experiments to perform and will dramatically impact our understanding of a variety of surface characteristics. The proposal was NOT well written, and the important goals should have been much clearer. Hence, a good grade for a not so well-written proposal. Make no mistake, this project should be done!

Referee C Rating= 1.0 Time rec= 100 % Ref mean 3.1 Time recommended: 32h, as requested

Comments: This is an excellent proposal. It is important to study the composition and physical state of the material in the south residual polar cap (so the proposed separation of observations by about 60 days is important). Also, this study should lead to better characterization to stealth-like regions.



Goldstone Solar System Radar (GSSR)



Arecibo Referees' Reports on Goldstone/AO Mercury Observations

From: harmon@naic.edu (John Harmon)
To: Martin.A.Slade@jpl.nasa.gov, jurgens@shannon.jpl.nasa.gov,
lharcke@stanford.edu, margot@gps.caltech.edu
Subject: R1783 Arecibo proposal report

The following are the referees' reviews of your Arecibo observing proposal for deadline February 1, 2003,
The referees' number grades are based on a 0-9 scale, with 9 being best. Also given is each referee's average
grade for all the proposals from this deadline. (R=Radar, G=General Astronomy)

Title: Bistatic (Goldstone 70-m to Arecibo) observations of the north polar region of Mercury in September 2003

Author(s): M.A. Slade, R.F. Jurgens, J.K. Harmon, L.J. Harcke, J.-L. Margot

Project: R1783

Ref R1; Grade: 8; Avg.= 8.33; Recommended % of time: 100

Comments:

First use of the Arecibo radar at X-band should be a good test of the new system!

Ref R2; Grade: 8; Avg.= 8.50; Recommended % of time: 100

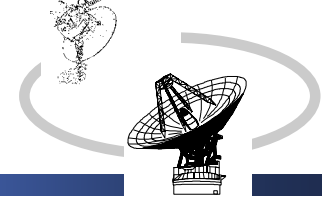
Comments:

The discovery of the polar ice deposits on Mercury was very interesting, and understanding these deposits and their
implications for planetary science is a worthwhile goal. The bistatic 3.5cm wavelength observations proposed here
will provide a piece of the puzzle by constraining the nature of the surface. The project warrants priority for
observations owing to the need to coordinate time with the Goldstone system.

Ref G4; Grade: 7; Avg.= 7.00; Recommended % of time: 100

Comments:

Bistatic radar experiment of Mercury's North pole: I do agree that multi-wavelength radar observations are needed to
better constrain the thickness of the Mercury regolith. It is not clear to me that the the radar SNR and
resolution issues have been adequately explained in the proposal. It is clear that Goldstone to AO is a better
experiment than Goldstone alone.



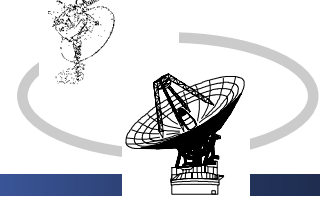
Radio Astronomy & Special Activities

**May 15, 2003
George Martinez**



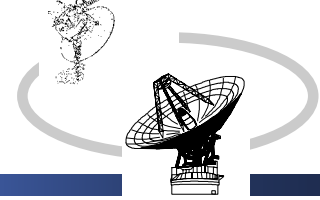
TEMPO

(Time and Earth Motion Precision Observations)



- **DOY 104**
 - No problems were reported by either DSS-15 or DSS-65.
 - Data tapes were sent to the JPL correlator for processing
- **DOY 118**
 - No problems were reported by either DSS-15 or DSS-65.
 - Data tapes were sent to the JPL correlator for processing.
- **Metrics**
 - 100% of data time utilized

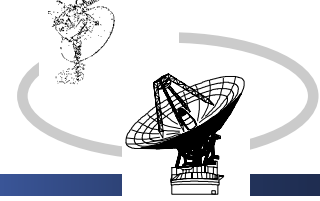
Catalog Maintenance & Enhancement (Cat M&E)



- **DOY 093**
 - DSS-14 reported S-Band RFI from Edwards AFB.
 - DSS-43 reported no problems.
 - Data tapes were sent to the JPL correlator for processing
- **DOY 102**
 - No problems were reported by DSS-15.
 - DSS-65 reported that the antenna brakes were set after reaching elevation S/W limits.
 - Data tapes were sent to the JPL correlator for processing.
- **Metrics**
 - 95% of data time utilized

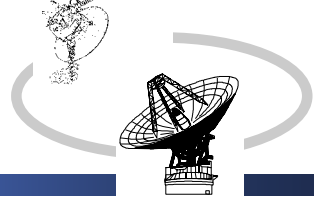


Future Events



- **Gravity Probe-B**
 - **BR088B**
 - Second epoch of four.
 - The 70-meter network will support this activity.
 - This experiment will observe the source HR8703, which will be used as a guide star for the Gravity Probe-B mission. This radio source is being observed for extremely accurate position (Astrometry) and measurement of its proper motion in an inertial frame. Only Astrometric VLBI can yield this accuracy.
- **Space Geodesy Program**
 - **IVS-T2017**
 - DSS-45 will support this activity .
 - The objective of the IVS-T2 sessions is to monitor the Terrestrial Reference Frame (TRF) via monthly sessions. All geodetic stations participate in at least three T2 sessions each year. These sessions replace the IRIS-S sessions observed in previous years.

Future Events (continued)



- **GBRA**
 - **BG134B**
 - This is a K-band dual polarization experiment at DSS-14 and DSS-63 to study water megamasers in an attempt to map sub-parsec accretion disks of supermassive black holes. In addition to Goldstone, observations were done using antennas of the VLBA, VLA, 100-m Greenbank Telescope, and the 100-m telescope at Effelsburg.
 - Concern
 - K-band pointing at DSS-14 is very poor with offsets from 16 mdeg to 30 mdeg.



ulysses

JOINT USERS RESOURCE ALLOCATION PLANNING COMMITTEE

B. Brymer

May 15, 2003

NASA Jet Propulsion Laboratory

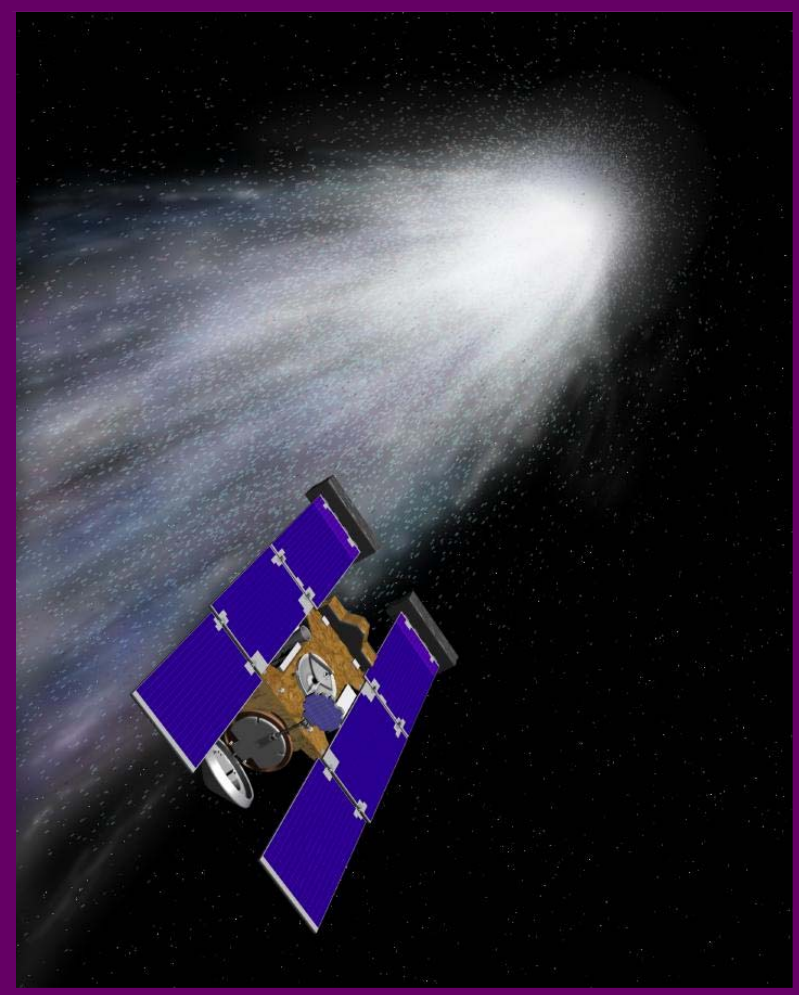
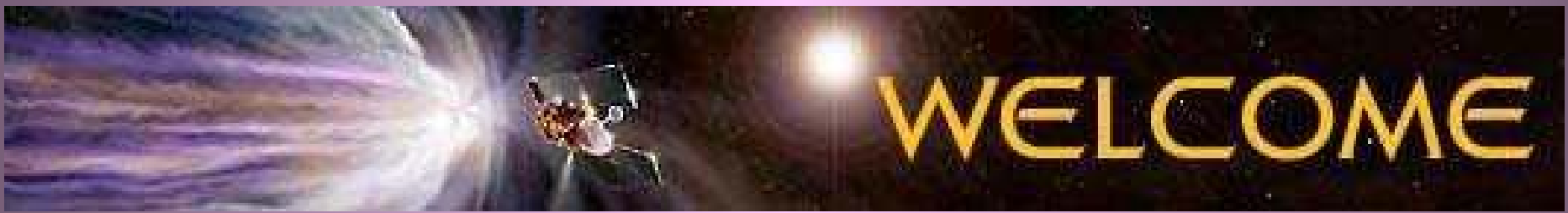


<http://ulysses.jpl.nasa.gov/>

ULYSSES

JOINT USERS RESOURCE ALLOCATION PLANNING COMMITTEE

- **NOMINAL SPACECRAFT OPERATIONS CONTINUE**
- **SPACECRAFT POWER AND THERMAL RECONFIGURATIONS AND INSTRUMENT CALIBRATIONS ARE PERFORMED AS REQUIRED**
- **SPACECRAFT EARTH POINTING MANEUVERS ARE BEING PERFORMED EVERY 6 DAYS**



STARDUST

JOINT USERS

RESOURCE ALLOCATION

PLANNING COMMITTEE

R. E. Ryan
MAY 15, 2003

NASA Jet Propulsion Laboratory

<http://stardust.jpl.nasa.gov>

STATUS

SPACECRAFT IS HEALTHY (5/15/03)

PRESENTLY 2.25 AU from EARTH

00:37:19 RTLT

1.25 AU from SUN

BIT RATE REMAINS AT 504 bps (on HGA/34 HEF)

DECREASE IN SOLAR RANGE

SOME DECREASE IN EARTH RANGE

MID-WAY BETWEEN CONJUNCTIONS

SEP (almost) 7 degrees)

CURRENT ACTIVITIES

- **COMET ENCOUNTER ACTIVITY PLANNING**
 - **ENCOUNTER SEQUENCE DETAILS IN WORK**
 - **WEEKLY STL RUNS TO CHECK AND REFINE**
- **PLANNING FOR 1 AU EDL (entry, descent & landing) TEST IN JUNE**
 - **A SERIES OF MICRO MANEUVERS AT 1 AU OPPORTUNITY TO TEST THE EFFECTS OF SMALL FORCES ON THE TRAJECTORY ACCURACY AND PREDICTABILITY**
- **DSMS SUPPORT HAS BEEN GOOD THIS PAST PERIOD**
 - **TWO NSP DEMOS WERE SCHEDULED**
 - DSS 45 DEMO WAS GOOD**
 - DSS 14 DEMO WAS GOOD**

<http://stardust.jpl.nasa.gov>

UPCOMING EVENTS

DSM-3/TCM 8 - JUNE 17 AND 18, 2003

1 AU EDL TEST JUNE 24 TO JULY 3, 2003

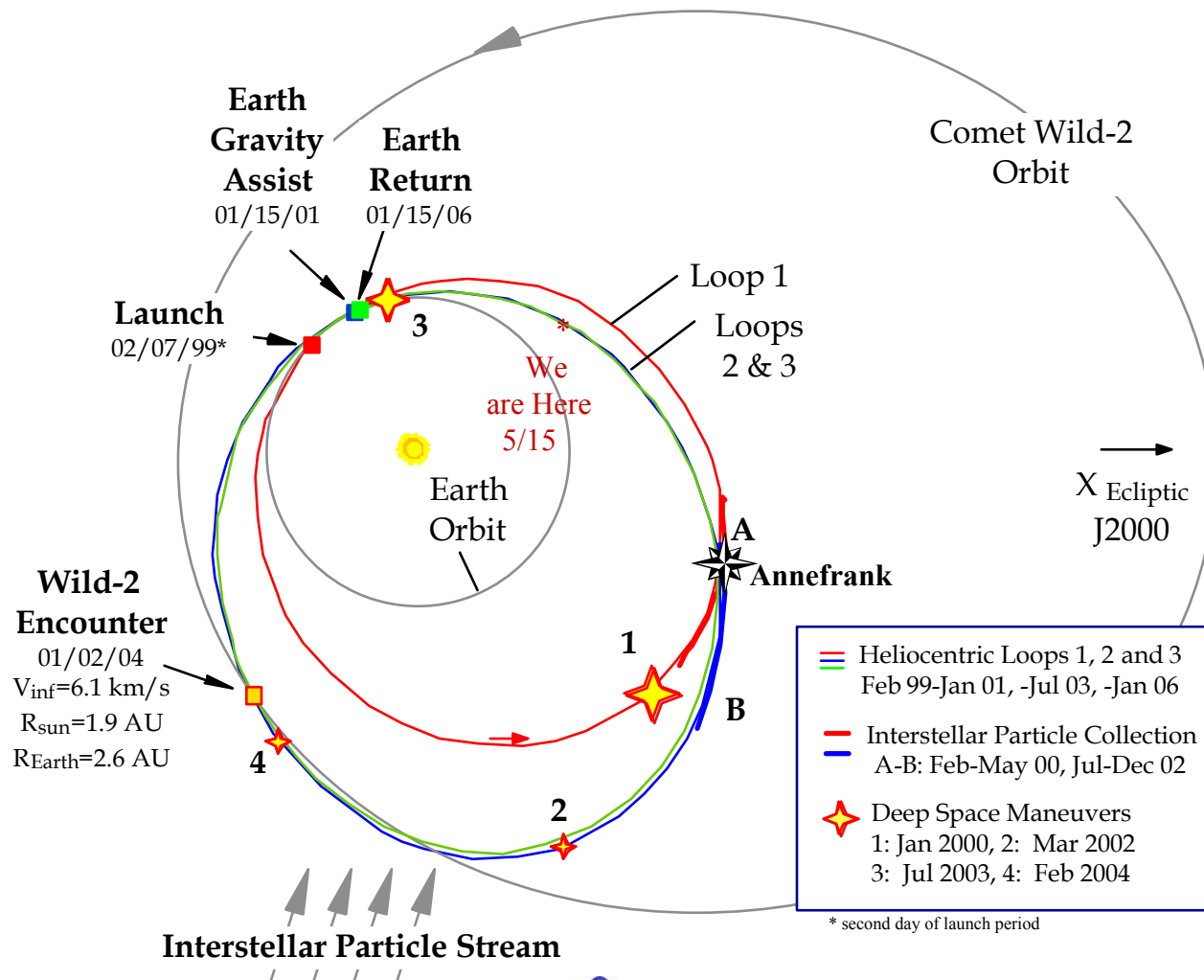
TCM 9 (CLEANUP) JULY 17

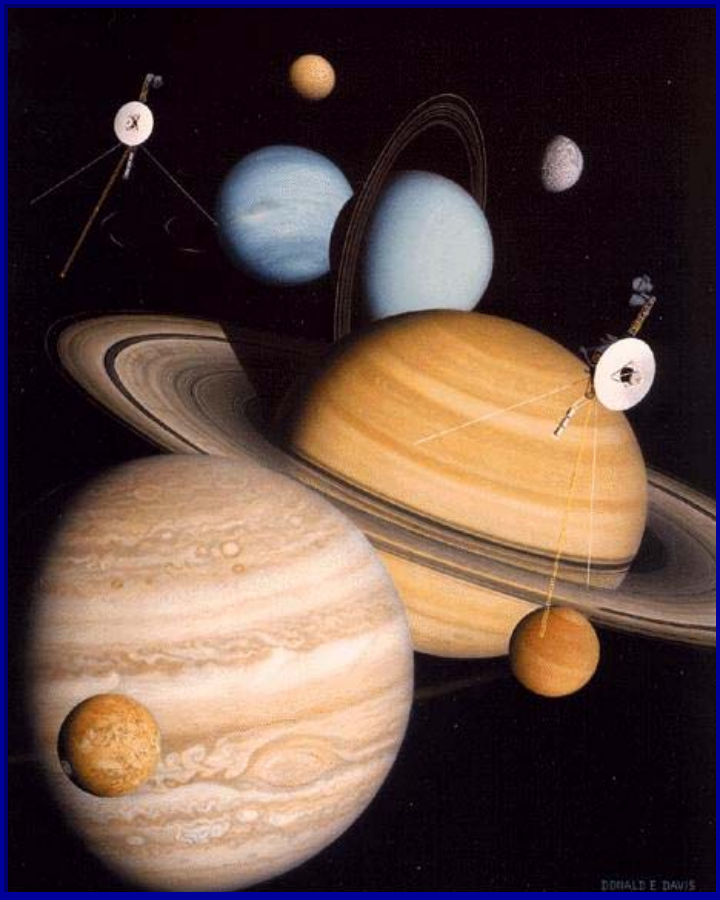
SUPERIOR CONJUNCTION ON AUGUST 17 (0.9 DEGREES)

BELOW 2 DEGREES SEP FROM AUGUST 2 THROUGH OCTOBER 2

STARDUST

Report to JURAP





VOYAGER

FLIGHT OPERATIONS

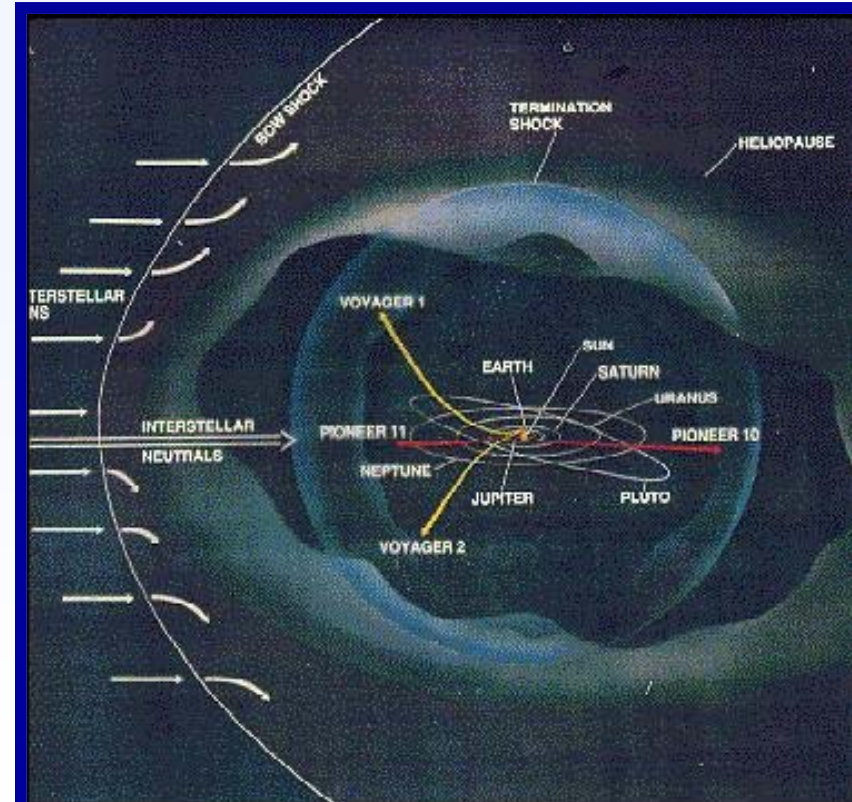
JOINT USERS RESOURCE ALLOCATION PLANNING COMMITTEE

Jefferson Hall
May 15, 2003

NASA Jet Propulsion Laboratory



<http://voyager.jpl.nasa.gov>





VOYAGER

FLIGHT OPERATIONS



FLIGHT SYSTEM STATUS

MISSION STATUS

VOYAGER 1

- * HELIOCENTRIC DISTANCE – 88.3 AU, RTLT – 24h15m38s
- * SPACECRAFT REMAINS HEALTHY
- * MAJOR ACTIVITY: DTR PLAYBACK, PMPCAL, ASCAL, & MAGROL

VOYAGER 2

- * HELIOCENTRIC DISTANCE – 70.3 AU, RTLT – 19h19m06s
- * SPACECRAFT REMAINS HEALTHY
- * MAJOR ACTIVITY: DTR PLAYBACK, PMPCAL, ASCAL, & MAGROL



VOYAGER

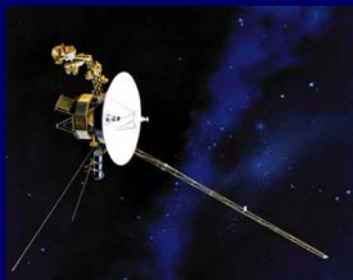
FLIGHT OPERATIONS



GROUND SYSTEM STATUS

(April 12, 2003 - May 9, 2003)

- DSN - OVERALL SUPPORT – GOOD
- Voyager 1
 - ❖ DSS-26 on 4/19 (DOY 109), 0.7 hours loss due to a DCC problem [DR G102665].
 - ❖ DSS-65 on 4/14(DOY 104) and 4/26 (DOY 116), total of 3.9 hours loss due to rain [DR M101530, DR M101559].
 - ❖ On 4/29 (DOY 119), CMG anomaly prevented uplink of a Command Loss Timer Reset.
- Voyager 2
 - ❖ DSS-43 on 4/29 (DOY 119), 2.2 hours loss due to an antenna halt which was due to film height alarms [DR C102318]. This also prevented radiation of another Command Loss Timer Reset.



VOYAGER

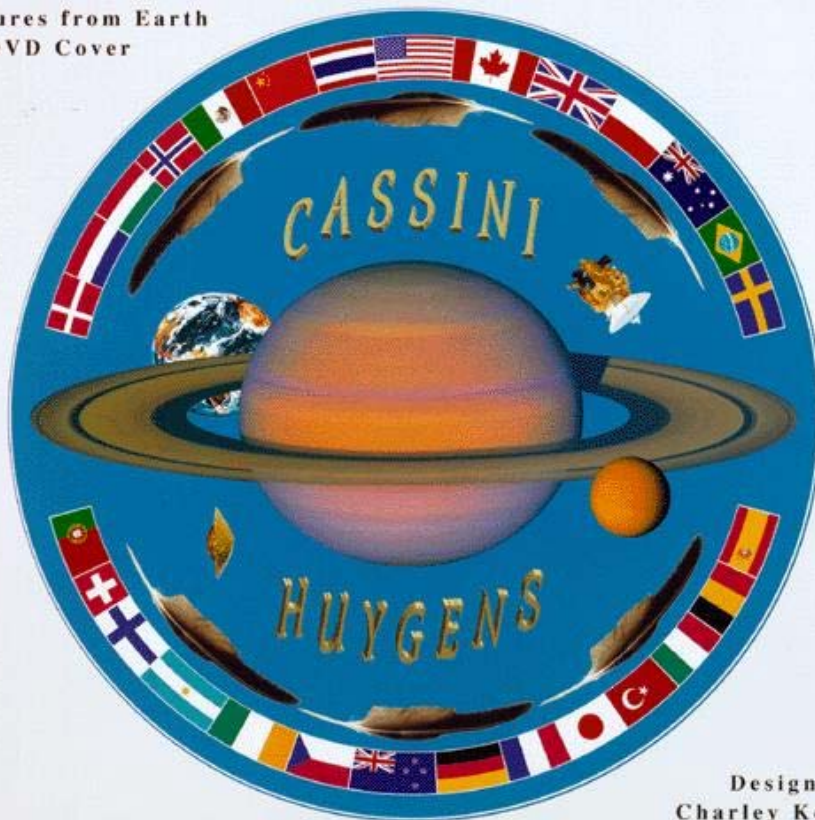
FLIGHT OPERATIONS



TOTAL SUPPORT TIME, OUTAGE TIME, % OF OUTAGE TIME

S/C	SCHED. SUPPORT	ACTUAL SUPPORT	70M TIME	SIGNIFICANT OUTAGE TIME	% OF OUTAGE TIME
31	334.3	334.3	55.0	4.6(1.2)	1.73
32	265.5	265.5	120.4	2.2(1.0)	1.21

VOYAGER HOMEPAGE - <http://voyager.jpl.nasa.gov>



Design by
Charley Kohlase

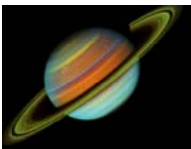
CASSINI

<http://saturn.jpl.nasa.gov/cassini/index.shtml>

Joint Users Resource Allocation Planning (JURAP) Committee Meeting

Dave Doody
May 15, 2003

NASA / Jet Propulsion Laboratory



Cassini / Huygens

- **In Space Science Subphase**

- Space Science observations resumed following Flight S/W installation and checkout
- Executed TCM-19 DOY 121, performance nominal.
- Huygens Probe Checkout # 11 performed DOY 123, results nominal.
- Performed first set of OPNAVS to check out the end-to-end system. Performance nominal.
- CDS Flight S/W for Saturn Tour is running as expected
 - Unexpectedly exercised new safing response: HGA, 1896 bps TLM after 1 hour on LGA
 - Entered safing Monday 5/12/03, cause was immediately recognized. Cleanup in progress.
 - Planning to restart the sequence this Saturday and return to science observations.
- Superior Conjunction RS Experiment scheduled for 30 days in June, July.
 - Reduced science objectives and DSN coverage, because of required use of thrusters vs reaction wheels
 - Minimizing use of RWA-3 which has exhibited friction problem.
- Approach Science mission phase begins in January
- Tour advanced science planning continues

- **Operations**

- Daily ops going well, excellent DSN support; good NOPE support
 - NSP configuration completed, congratulations!
 - Minor S/C instrument adjustments, cals, and anomalies being worked near real time
 - Working Huygens Mission Data Delivery plans for the '05 Titan mission
 - DSMS is considering Cassini's request for replacement of NOCC-R/T Display with single NMC instance.



2001 Mars Odyssey Report to JURAP

May 15, 2003
Mars Odyssey



<http://mars.jpl.nasa.gov/odyssey/>





Mars Odyssey Mission Status



Spacecraft Operations and Science Instruments are nominal

April 7, 2003 marked the 2-year anniversary of Odyssey launch

On this date, we completed our 5000th mapping orbit

Mission Statistics (as of May 8):

- Day 441 of the 917-day science mission (48% complete)
- Total # Mapping Orbits: 5360 (6176 since MOI)
- 759 days past Launch (61% of mission complete)
 - Launch: April 7, 2001 End of Primary Mission: August 24, 2004
- Propellant Remaining: 41.5 kg
 - Used to date 2.2 kg (since beginning of science mission: Feb 19, 2002)

Science Data Return:

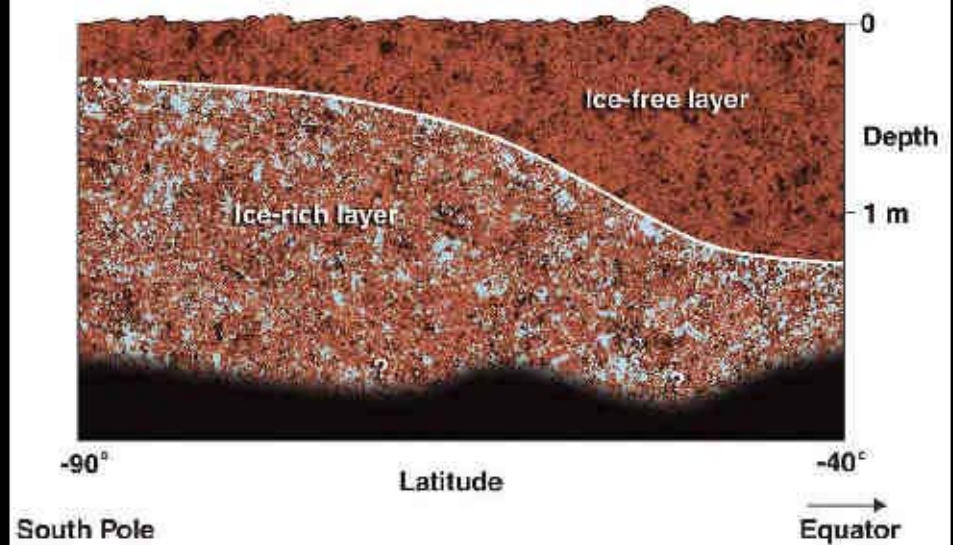
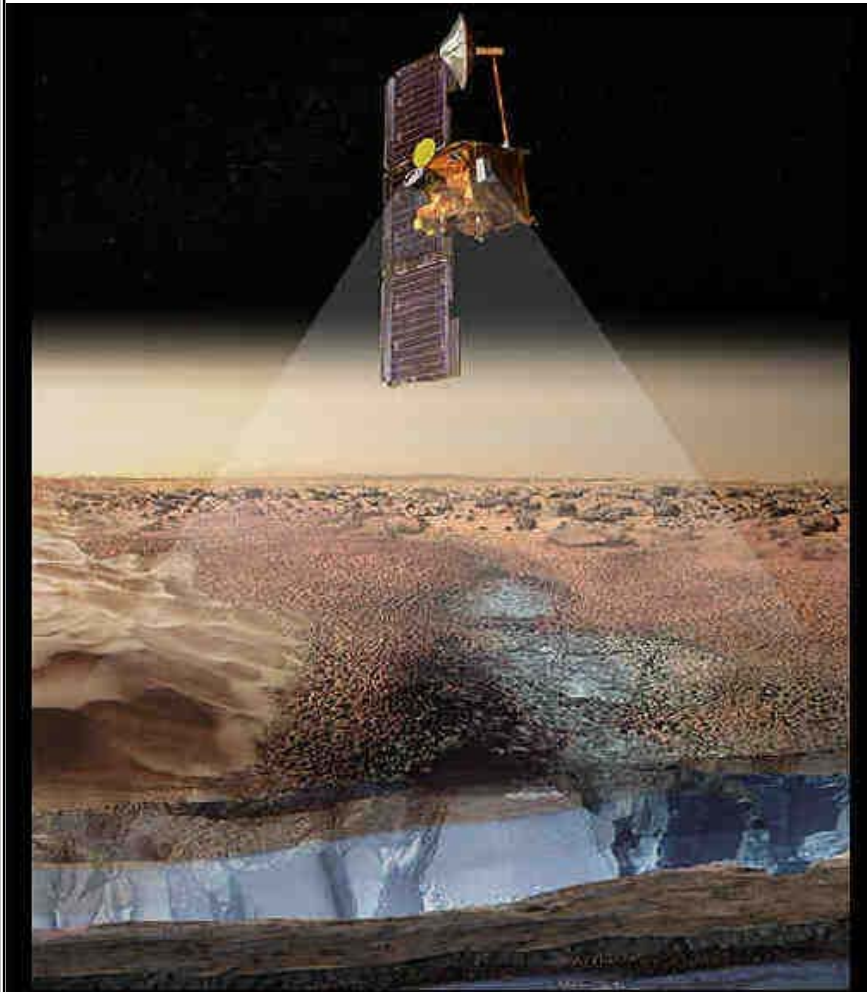
- Total Science Data Returned to Date: ~155 Gbytes
- Actual data return is greater than baseline: DSN allocations better than planned, operations enhancements, data compression

3

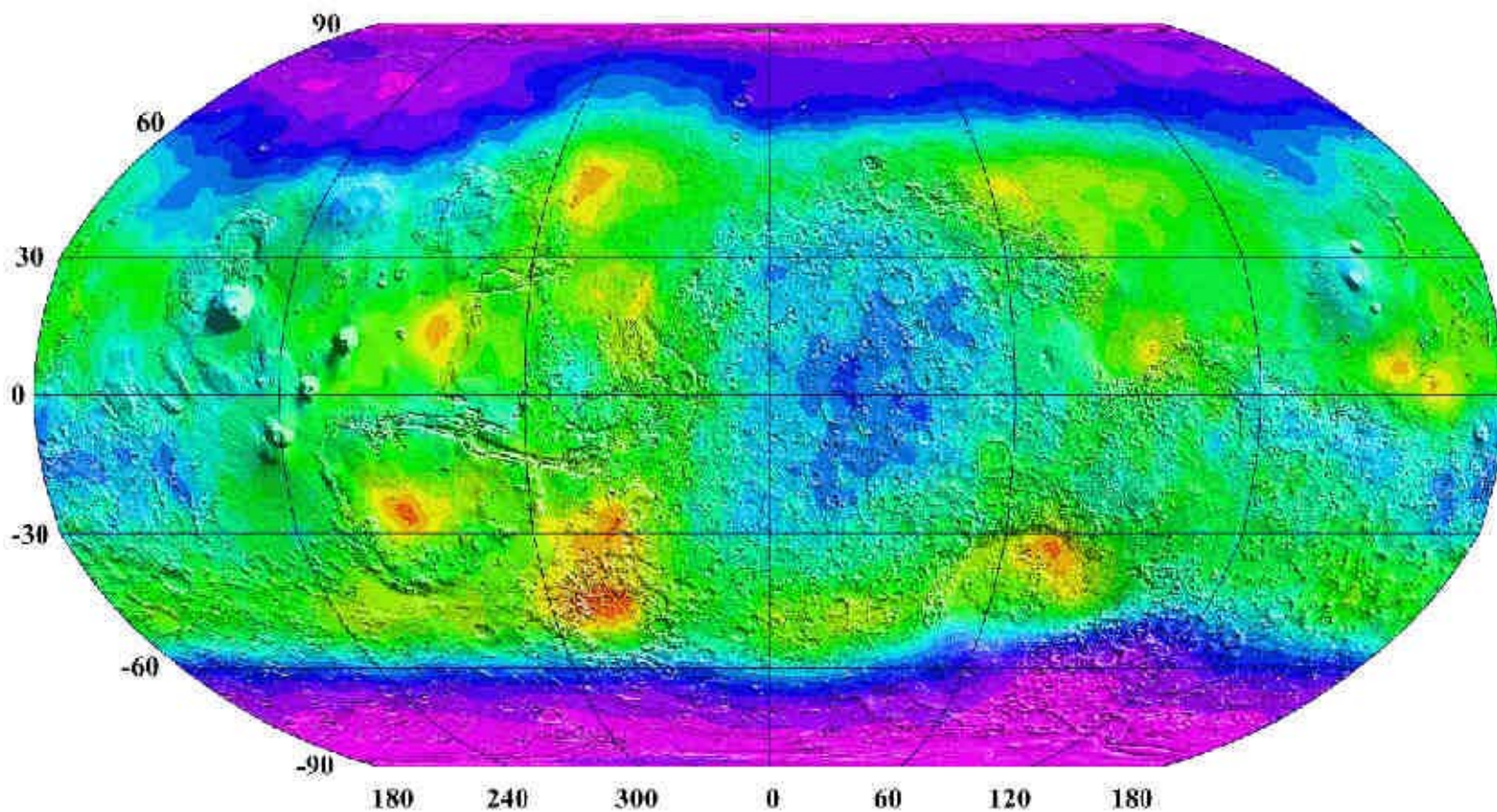


GRS Detecting Ice in the Shallow Subsurface

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California Institute of Technology



Neutron Spectrometer Data CO₂-Frost-Free

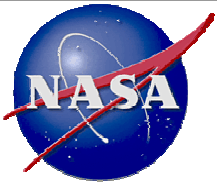


Epithermal Neutrons

H₂O-Rich

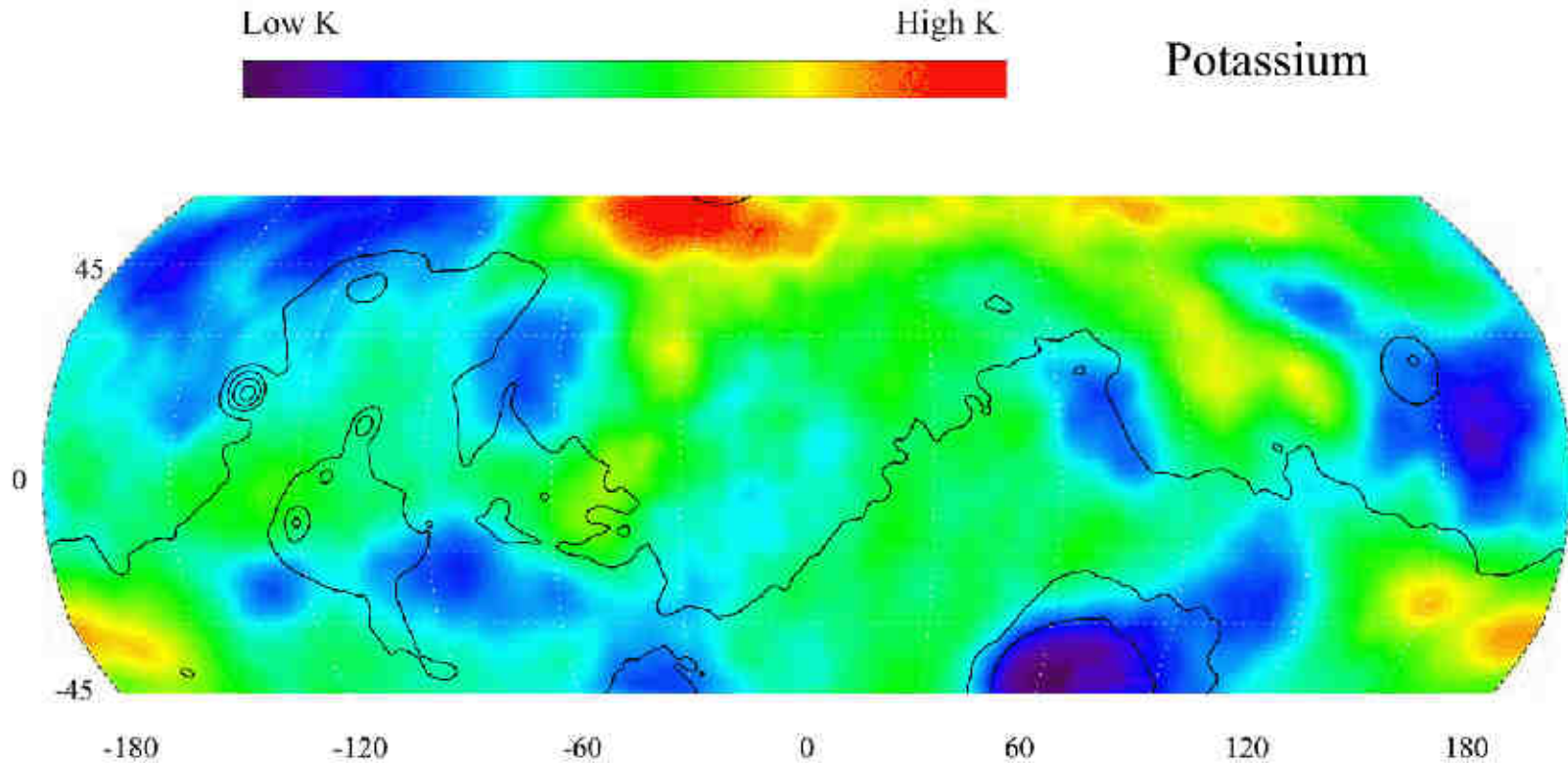
H₂O-Poor

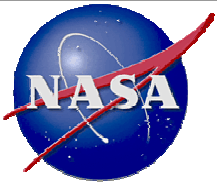




Gamma Ray Spectrometer

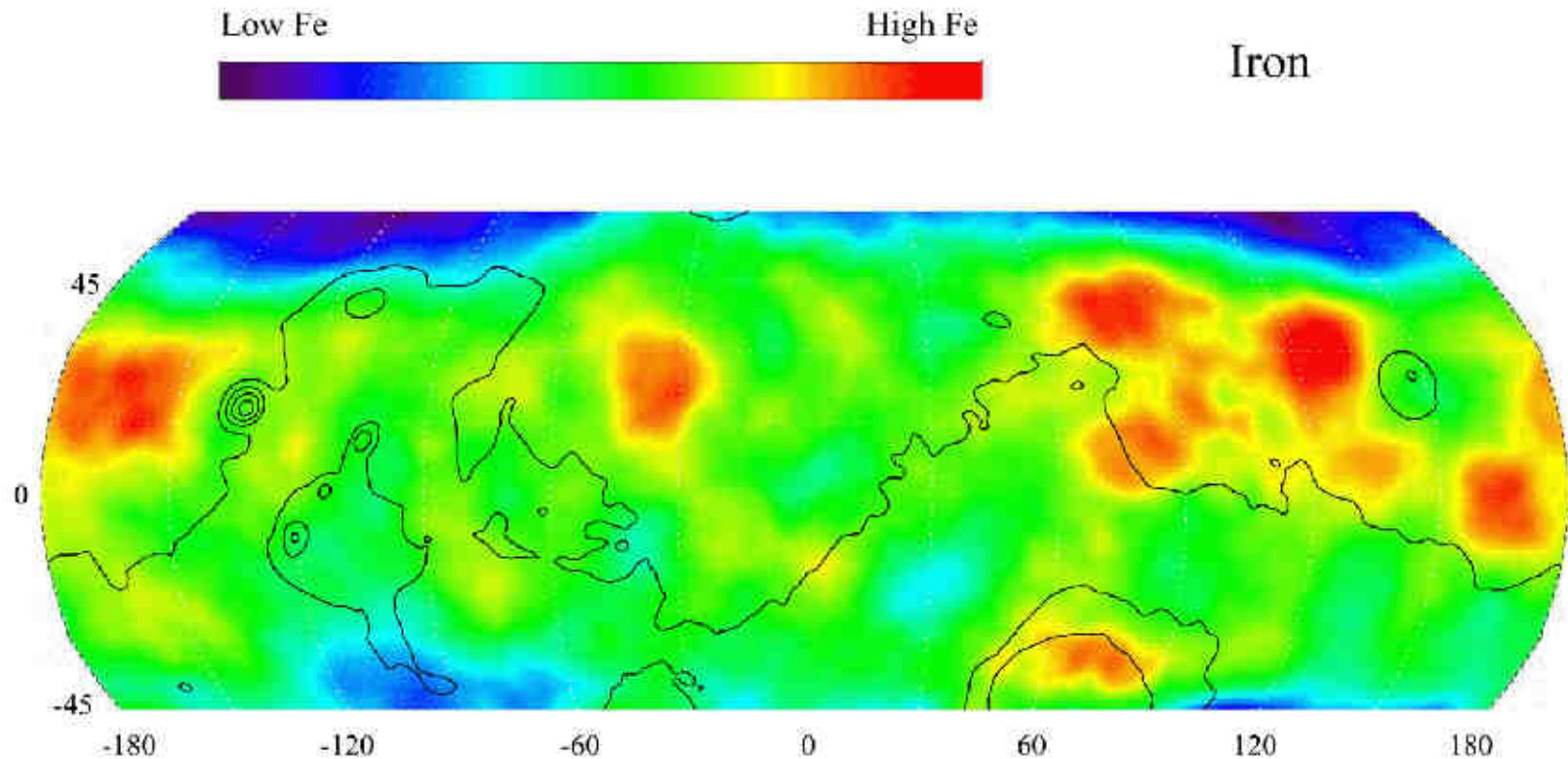
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Jet Propulsion Laboratory
California Institute of Technology





Gamma Ray Spectrometer

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Jet Propulsion Laboratory
California Institute of Technology



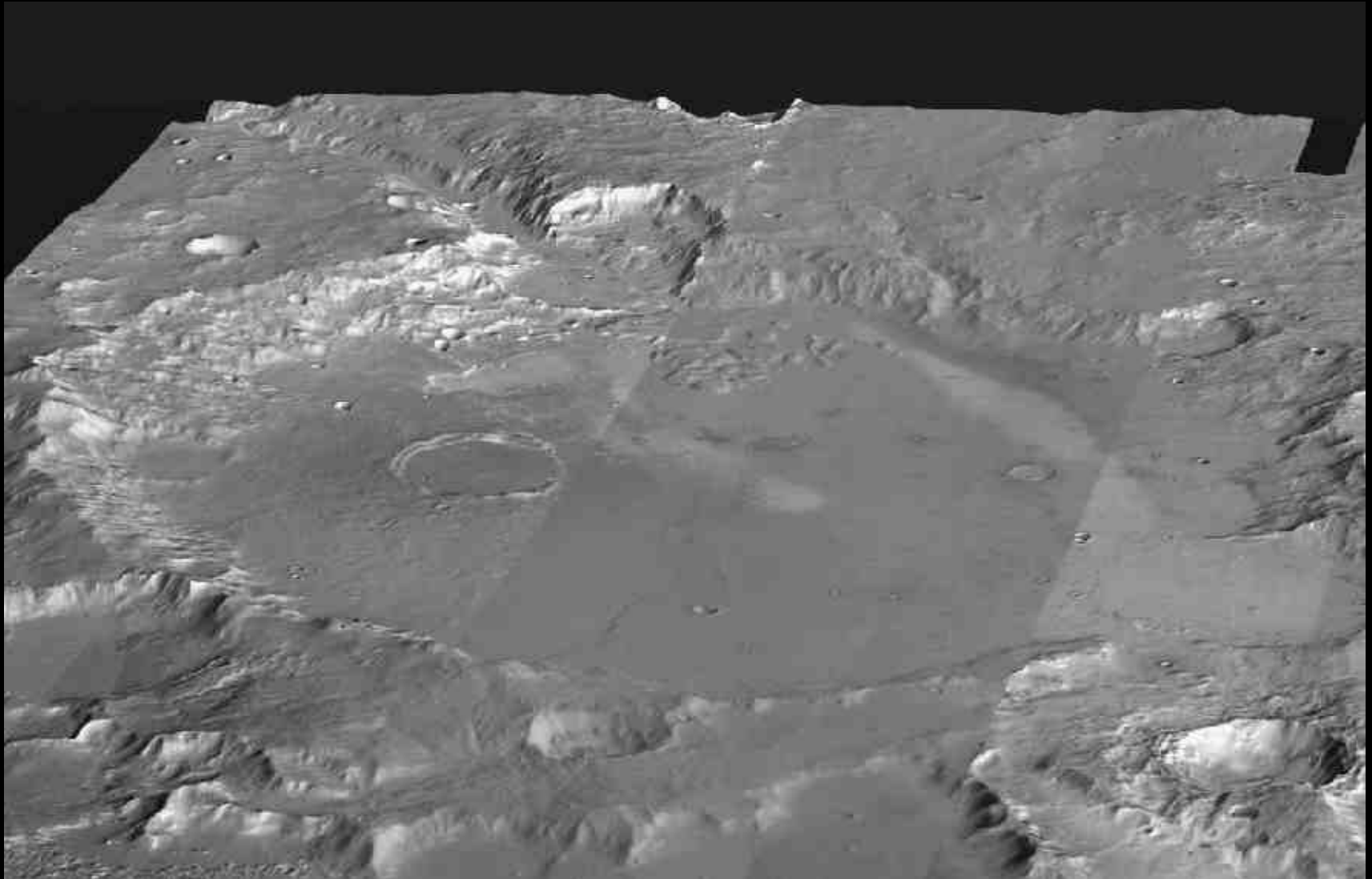


2.5 km

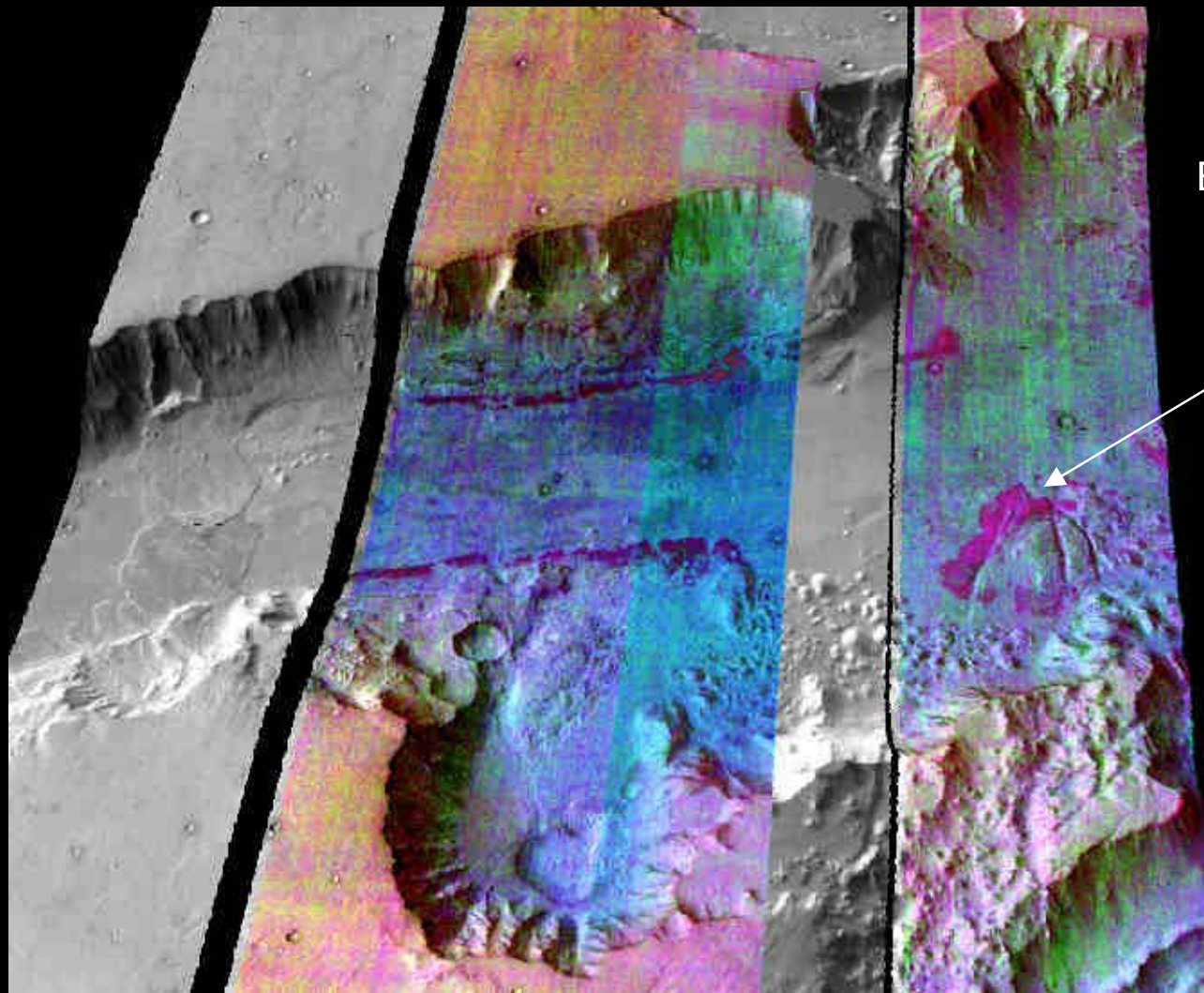
V03514003
W. Arcadia
554 540 428
39°N 179°E

THEMIS Daytime Infrared Mosaic

Gusev Crater



THEMIS False-Color Infrared Image Ganges Chasma

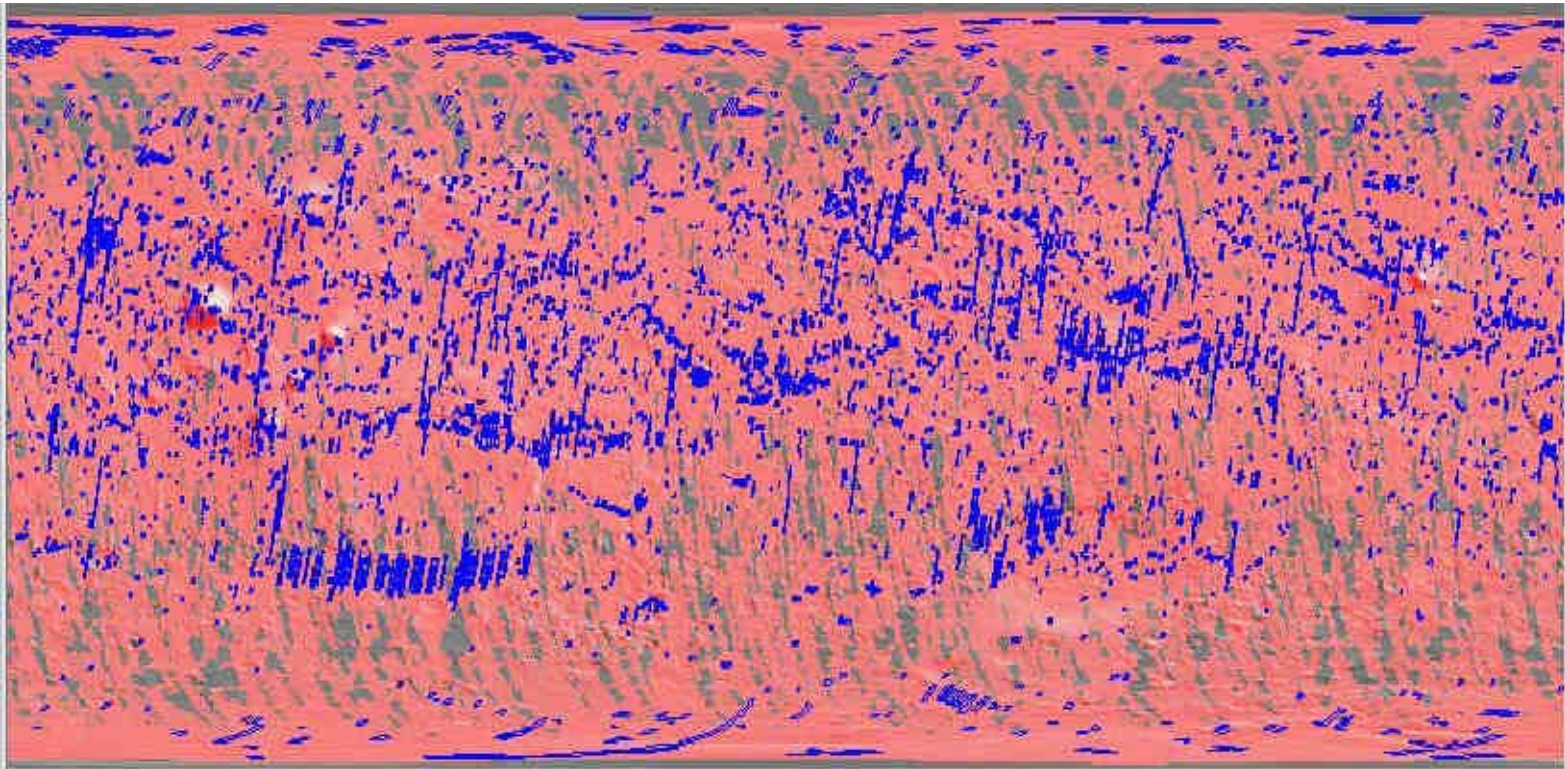


Basaltic Lava Rock
(Blue)

Olivine (Purple)



THEMIS Coverage as of 4 April 2003



Pink = Infrared: Day 42% of surface; Night 52% of surface
Blue = Visible: ~ 5% of surface



Odyssey Science Top Ten



1. Abundant water ice in the upper meter of the subsurface poleward of 60°.
2. Hypothesis for gully formation: melting of remnant snow packs.
3. Water ice exposed at the surface near the south pole.
4. Hydrated soil at low latitudes.
5. Thermophysical unit diversity (sediments, crater ejecta, etc.).
6. Bedrock exposures are common.
7. Significant spatial variations in K, Th, Fe, Si.
8. Olivine-rich surface compositions mapped at 100 m resolution.
9. Ionizing radiation dose monitored in interplanetary cruise and Mars orbit.
10. Winter polar warming in upper atmosphere observed during aerobraking.